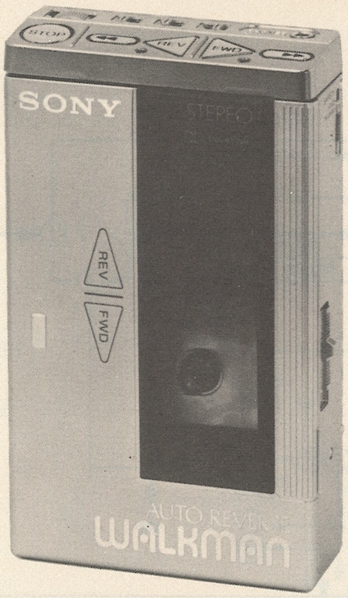
WM-7

US Model
Canadian Model
AEP Model
UK Model
E Model



STEREO CASSETTE PLAYER

SPECIFICATIONS

Tape track	4-track 2-channel stereo
Fast winding time	Approx. 2 min. with Sony cassette C-60
Frequency response (DOLBY NR OFF)	
	40–15,000 Hz (with the TAPE selector set to CrO$_2$ METAL)
	40–15,000 Hz (with the TAPE selector set to NORM)
Power output	25 mW × 2 (max.)
	20 mW × 2 (at 10% harmonic distortion) at dc operation
Output	Headphone jack (stereo minijack) . . . . 1 load impedance 8–200 ohms
Power requirements	
	3 V dc
	Two batteries: IEC designation R6 (size AA)
	External batteries (used in the optional battery case EBP-500): IEC designation R20 (size D) × 2

DC IN 3 V jack accepts:
AC power adaptor; Refer to the following chart to choose the correct adaptor for your area.

Country	Ac power line voltage	Optional ac power adaptor
Japan	100 V ac, 50/60 Hz	AC-39 available in Japan
U.S.A. and Canada	120 V ac, 60 Hz	AC-39 available in U.S.A. and Canada
The United Kingdom	240 V ac, 50 Hz	AC-37 available in the United Kingdom
European countries	220 V ac, 50 Hz	AC-37 available in European countries
Other countries	120 V ac (110, 220 or 240 V ac, adjustable by Sony personnel), 50/60 Hz	AC-38 available in Japan
	110, 120, 220 or 240 V ac, adjustable, 50/60 Hz	AC-38 available in other countries

DCC-127A car battery cord (optional) for use with 12 V car battery

— Continued on page 2 —

Tape Transport Mechanism	MT-WM7-23

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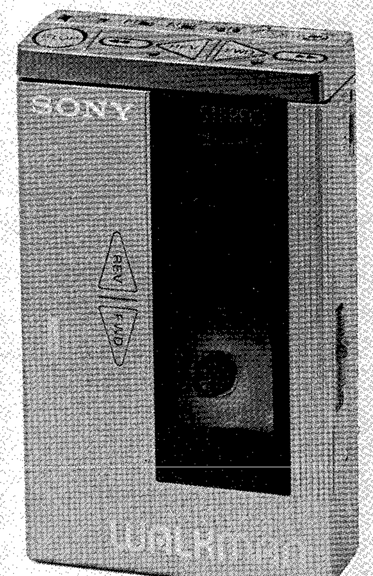
SERVICE MANUAL

WM-7



US Model
Canadian Model
AEP Model
UK Model
E Model

STEREO CASSETTE PLAYER

SPECIFICATIONS

Tape track 4-track 2-channel stereo
Fast winding time Approx. 2 min. with Sony cassette C-60
Frequency response (DOLBY NR OFF)
40–15,000 Hz (with the TAPE selector set to $\genfrac{}{}{0pt}{}{\mathrm{CrO_2}}{\mathrm{METAL}}$)
40–15,000 Hz (with the TAPE selector set to NORM)
Power output 25 mW × 2 (max.)
20 mW × 2 (at 10% harmonic distortion) at dc operation
Output Headphone jack (stereo minijack) 1
load impedance 8–200 ohms
Power requirements
3 V dc
Two batteries: IEC designation R6 (size AA)
External batteries (used in the optional battery case EBP-500): IEC designation R20 (size D) × 2

DC IN 3 V jack accepts:
AC power adaptor; Refer to the following chart to choose the correct adaptor for your area.

Country	Ac power line voltage	Optional ac power adaptor
Japan	100 V ac, 50/60 Hz	AC-39 available in Japan
U.S.A. and Canada	120 V ac, 60 Hz	AC-39 available in U.S.A. and Canada
The United Kingdom	240 V ac, 50 Hz	AC-37 available in the United Kingdom
European countries	220 V ac, 50 Hz	AC-37 available in European countries
Other countries	120 V ac (110, 220 or 240 V ac, adjustable by Sony personnel), 50/60 Hz	AC-38 available in Japan
	110, 120, 220 or 240 V ac, adjustable, 50/60 Hz	AC-38 available in other countries

DCC-127A car battery cord (optional) for use with 12 V car battery

– Continued on page 2 –

Tape Transport Mechanism	MT-WM7-23

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SERVICE MANUAL

SECTION 1
OUTLINE

Battery life (continuous playback hours)
Approx. 5.0 hours with supplied Sony Eveready AM3 alkaline batteries
Approx. 2.0 hours with Sony SUM-3 (NS) New Super batteries

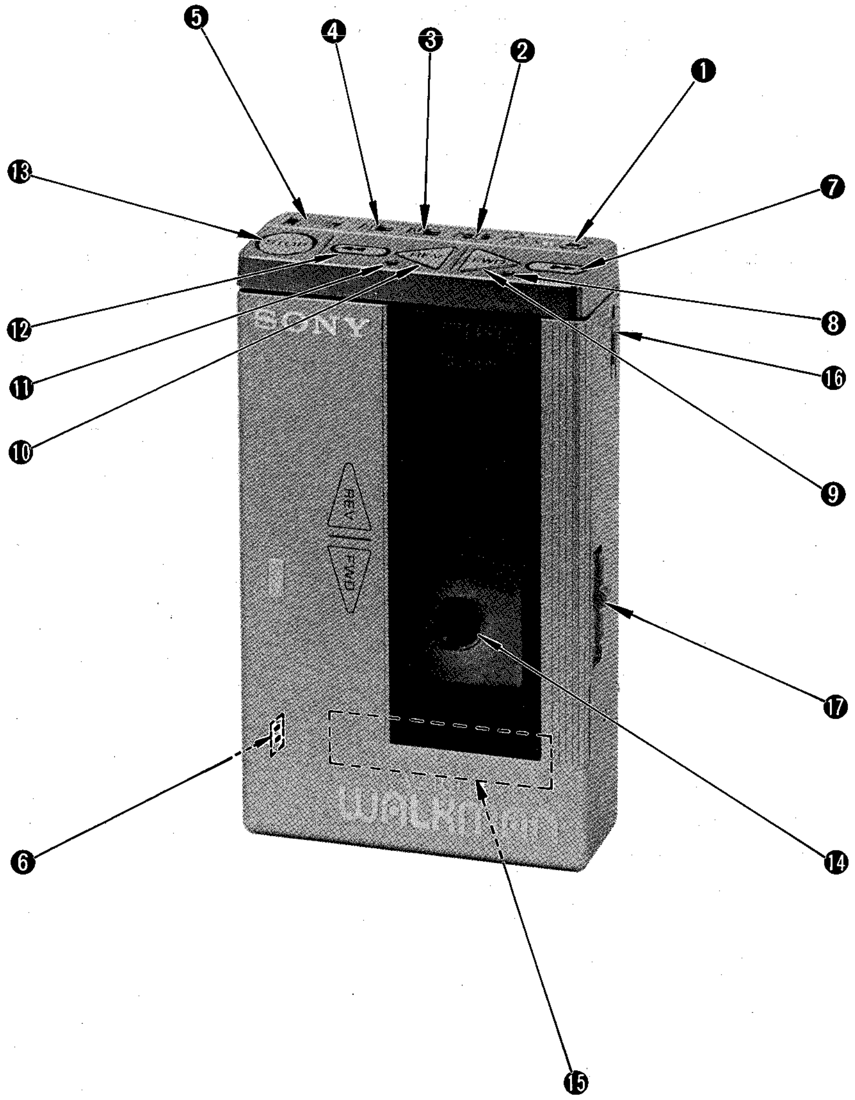
For maximum performance we recommend the use of alkaline batteries.

Dimensions Approx. 79.6 × 134.8 × 31.1 mm (w/h/d)
(3¹/₈ × 5³/₈ × 1¹/₄ inches)
not incl. projecting parts and controls
Weight Approx. 410 g (14¹/₂ oz) incl. batteries, not incl. other accessories

Accessories supplied
Demonstration tape cassette (1)
Stereo headphones (1)
Sony Eveready AM3 alkaline batteries (2)
Carrying case and shoulder strap (1 set)

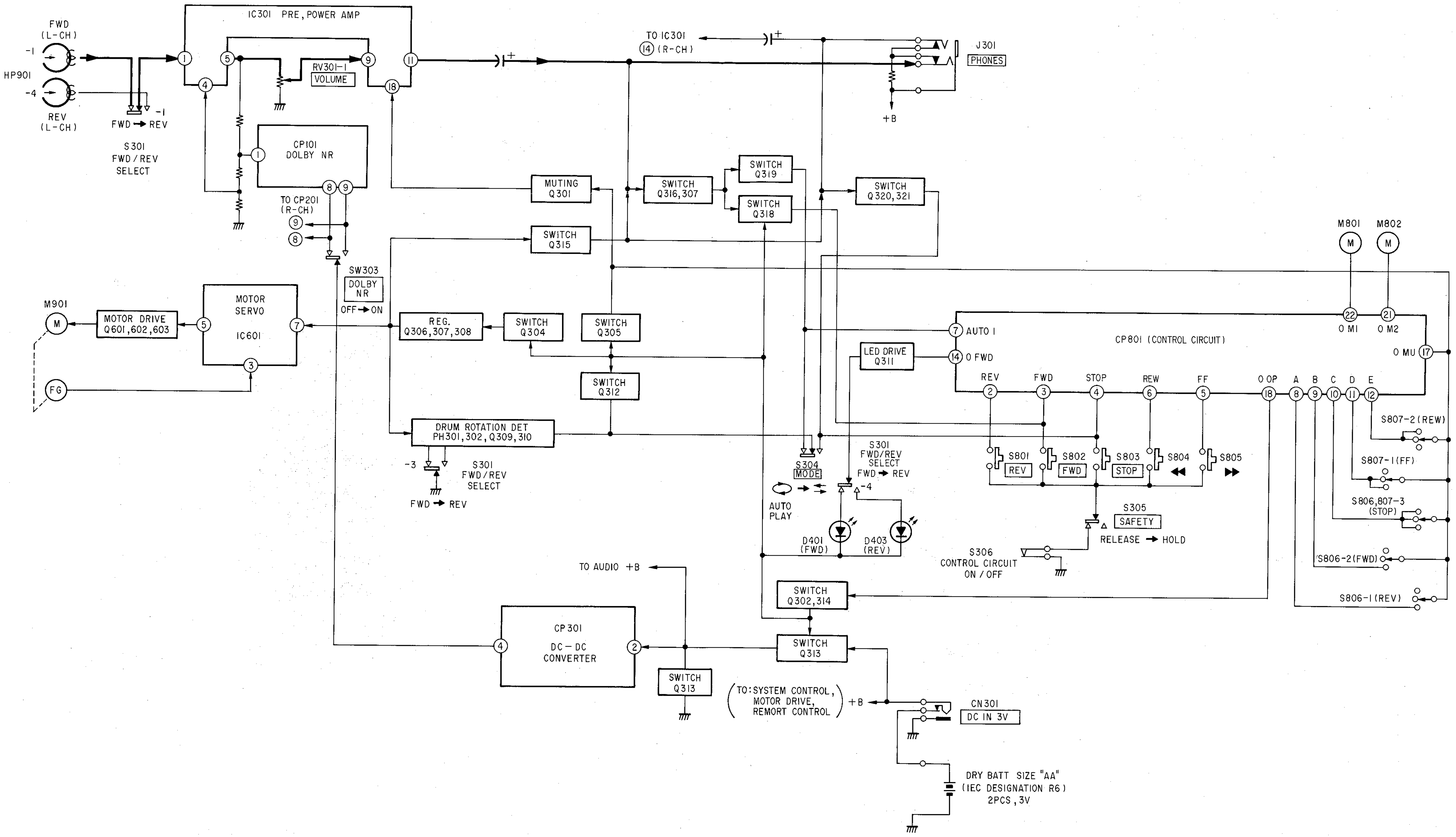
0 dB = 0.775 V

1-1. LOCATION OF PARTS



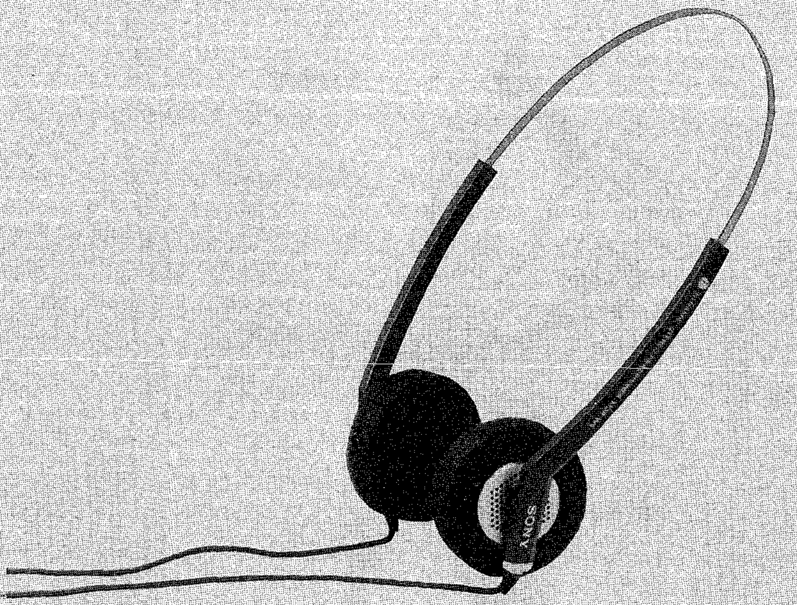
① PHONES jack (stereo minijack)
② DOLBY NR switch
③ TAPE selector
④ MODE selector
⑤ VOLUME control
⑥ DC IN 3 V (external power input) jack
⑦ ▶▶ button
⑧ FWD/battery indicator (LED)
⑨ FWD (forward) button
⑩ REV (reverse) button
⑪ REV/battery indicator (LED)
⑫ ◀◀ button
⑬ STOP button
⑭ Cassette holder
⑮ Battery compartment (inside)
⑯ SAFETY switch
⑰ OPEN button

1-2. BLOCK DIAGRAM


FWD (L-CH)
HP901
REV (L-CH)
FWD → REV
S301 FWD/REV SELECT
IC301 PRE, POWER AMP
RV301-1 VOLUME
CP101 DOLBY NR
TO CP201 (R-CH)
SW303 DOLBY NR
OFF → ON
TO IC301 ⑭ (R-CH)
J301 PHONES
+B
MUTING Q301
SWITCH Q316,307
SWITCH Q319
SWITCH Q318
SWITCH Q320,321
SWITCH Q315
M901
MOTOR DRIVE Q601,602,603
MOTOR SERVO IC601
FG
REG. Q306,307,308
SWITCH Q304
SWITCH Q305
SWITCH Q312
DRUM ROTATION DET PH301,302,Q309,310
S301 FWD/REV SELECT
FWD → REV
M801
M802
CP801 (CONTROL CIRCUIT)
AUTO I
O FWD
O MI
O M2
O MU
REV
FWD
STOP
REW
FF
O OP
A B C D E
LED DRIVE Q311
S304 MODE
AUTO PLAY
S301 FWD/REV SELECT
FWD → REV
D401 (FWD)
D403 (REV)
S801 REV
S802 FWD
S803 STOP
S804
S805
S305 SAFETY
RELEASE → HOLD
S306 CONTROL CIRCUIT ON / OFF
S807-2 (REW)
S807-1 (FF)
S806,807-3 (STOP)
S806-2 (FWD)
S806-1 (REV)
TO AUDIO +B
CP301 DC – DC CONVERTER
SWITCH Q302,314
SWITCH Q313
SWITCH Q313
TO: SYSTEM CONTROL, MOTOR DRIVE, REMORT CONTROL
+B
CN301 DC IN 3V
DRY BATT SIZE "AA" (IEC DESIGNATION R6) 2PCS, 3V

MDR-W5

US Model
Canadian Model
AEP Model
UK Model
E Model



DYNAMIC STEREO HEADPHONES

SPECIFICATIONS

Type:	Dynamic
Driver Units:	23mm dia, dome
Impedance:	25Ω at 1kHz
Sensitivity:	100dB/mW
Rated Power:	40mW
Power Handling Capacity:	100mW
Frequency Response:	18 – 20,000Hz
Cord Length:	1m 1.2m (with switch)
Weight:	32g (without cord)

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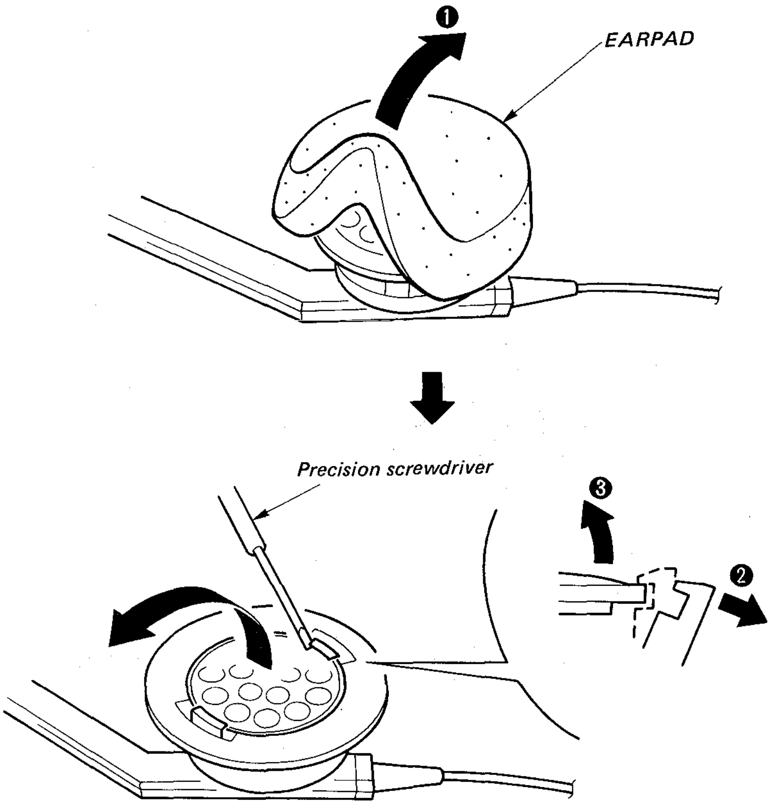
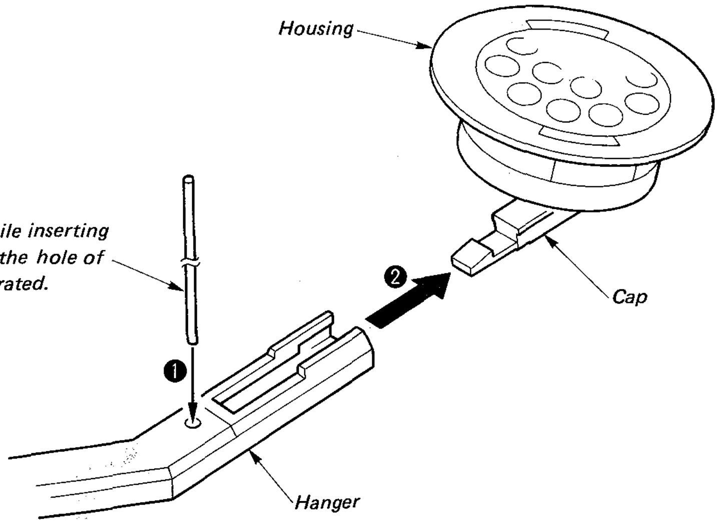
1. DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

DRIVER REMOVAL

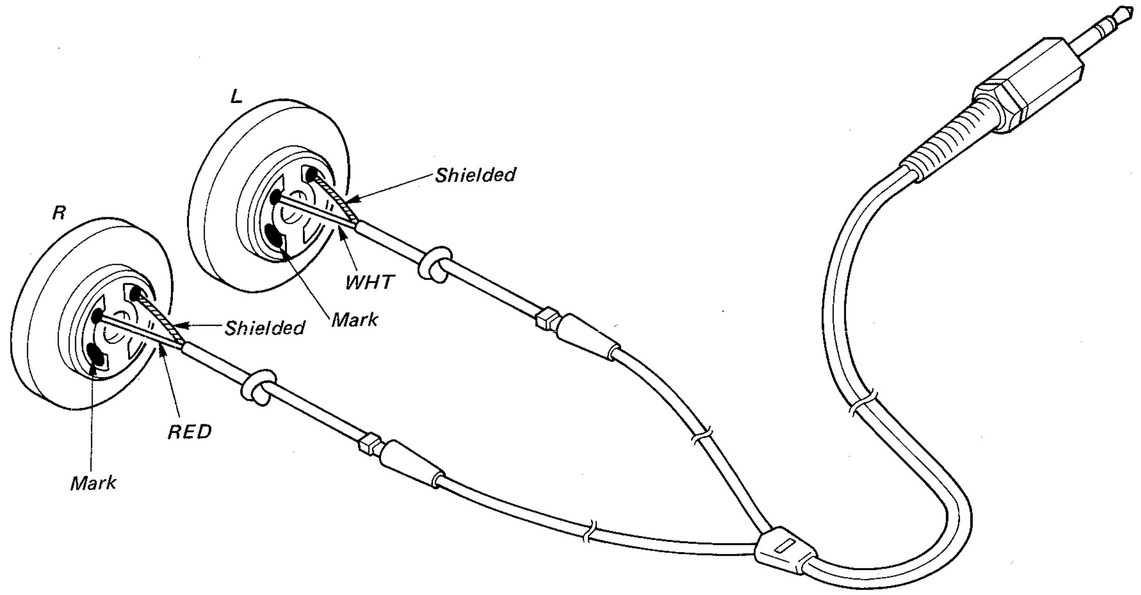

❶
EARPAD
Precision screwdriver
❸
❷

HOUSING REMOVAL

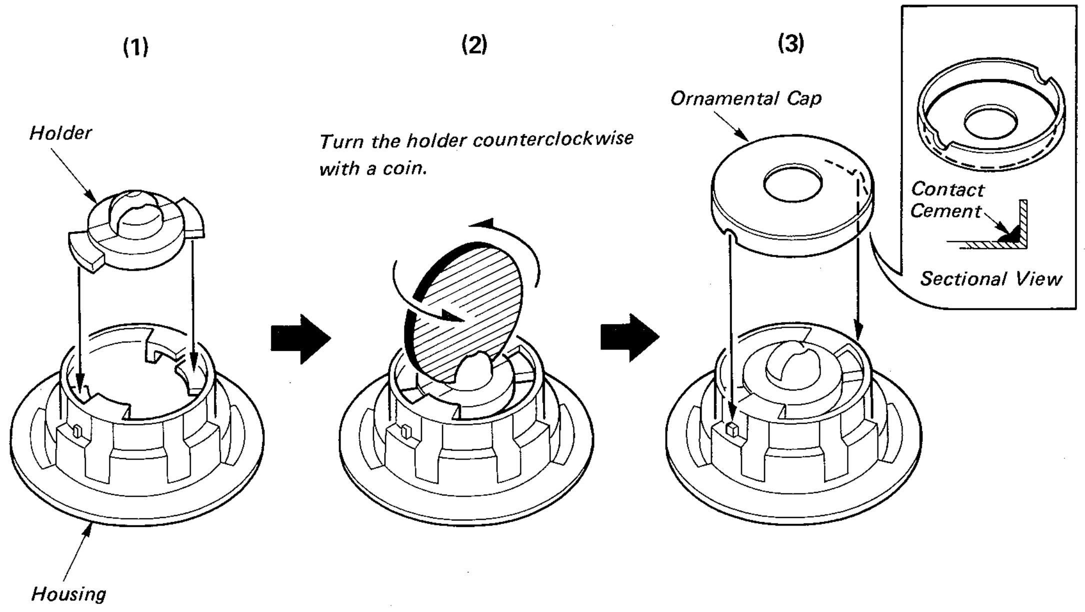

Housing
❷
Cap
❶
Hanger

Pull off the cap while inserting the thin shaft into the hole of the hanger as illustrated.

2. WIRING DIAGRAM

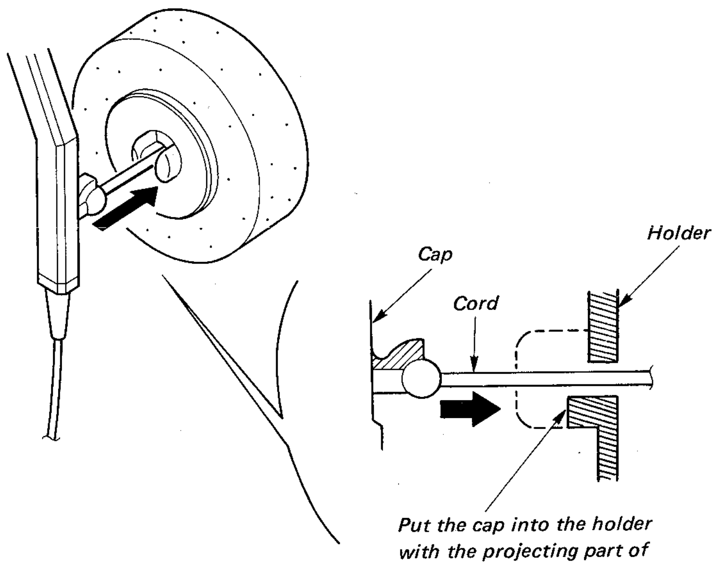

L
R
Shielded
WHT
Mark
Shielded
RED
Mark

3. HOLDER INSTALLATION


(1)
(2)
(3)
Holder
Housing
Ornamental Cap
Contact Cement
Sectional View

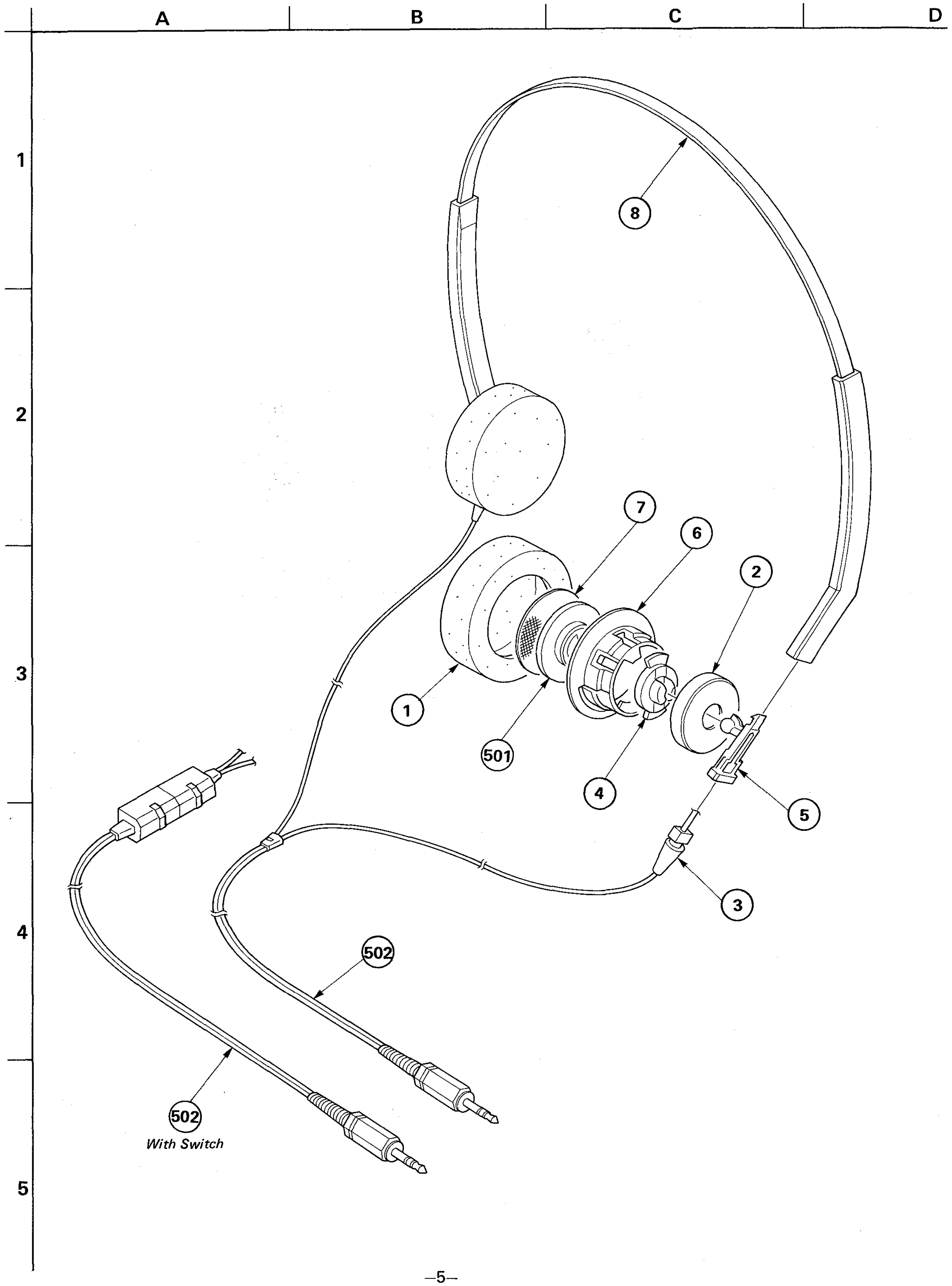
Turn the holder counterclockwise with a coin.

4. CAP INSTALLATION


Cap
Cord
Holder

Put the cap into the holder with the projecting part of the holder set as illustrated.

5. EXPLODED VIEW



6. PARTS LIST

GENERAL SECTION

No.	Part No.	Description
1	2-376-301-00	PAD, EAR
2	2-376-302-00	CAP, ORNAMENTAL
3	2-376-303-00	BUSHING
4	2-376-304-00	HOLDER
5	2-376-305-00	CAP
6	2-376-308-00	HOUSING
7	4-865-916-00	SCREEN (D)
8	X-2376-301-1	HEAD BAND ASSY

ELECTRICAL PARTS

No.	Part No.	Description
501	1-505-058-11	DRIVER
502	1-555-459-21	CORD
502	1-556-615-00	CORD (WITH SWITCH)

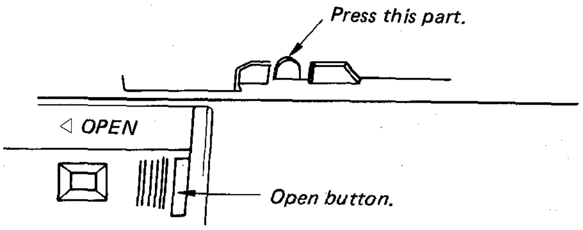
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♠ " are not stocked since thev are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

Sony Corporation
Audio & Video Group © 1982

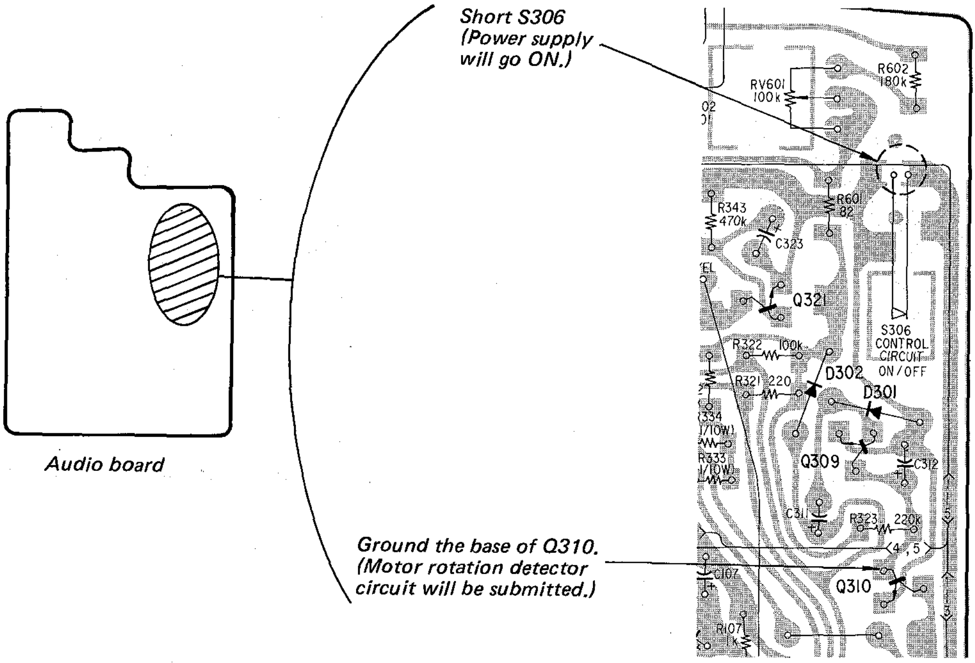
English
82J04154-1
Printed in Japan

1-3. PRECAUTIONS IN REPAIRING

1. Press the part shown below for operating the cassette drive with the cassette lid open.


Press this part.
◁ OPEN
Open button.

2. Take the following steps to operate the set with the audio board removed. After the repairing operations are over, make sure that these are returned to their original state.


Audio board
RV601 100k
R602 180k
R601 82
R343 470k
C323
Q321
S306 CONTROL CIRCUIT ON/OFF
R322 100k
R321 220
D302
D301
Q309
C312
C311
R323 220k
C107
Q310
R107 1k
R334 1/10W
R333 1/10W

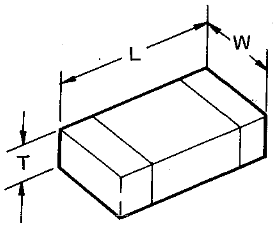
Short S306 (Power supply will go ON.)

Ground the base of Q310. (Motor rotation detector circuit will be submitted.)

3. Check for Faulty M801 and M802
   Remove the control chassis and check if the motor rotates properly when a 1.5 V supply is connected across the terminals of the motor.

Chip components

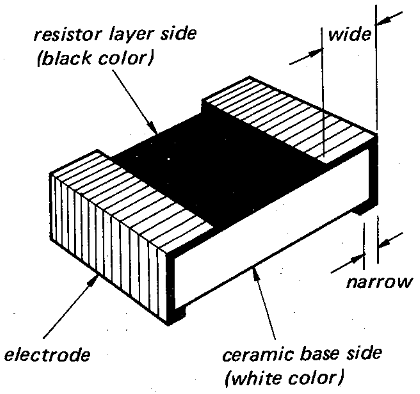
Chip components include resistors, capacitors, transistors, diodes, coil and adjustable resistors.
In this section, the types of resistors, ceramic capacitors, transistors and diodes which are used most frequently will be described.
Dimension of transistors and capacitors



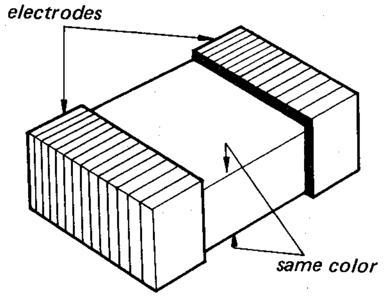
(Unit: mm)

Type	L	W	T
3216	3.2	1.6	0.45 ~ 0.6
2125	2.0	1.25	0.35 ~ 0.5

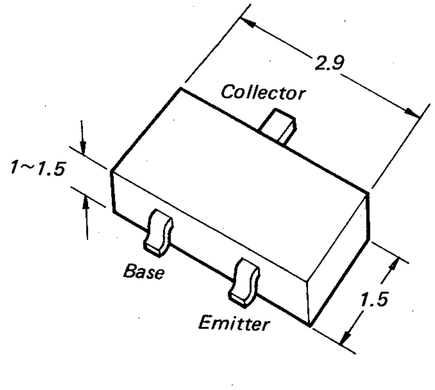
Identification


resistor layer side
(black color)
wide
narrow
electrode
ceramic base side
(white color)

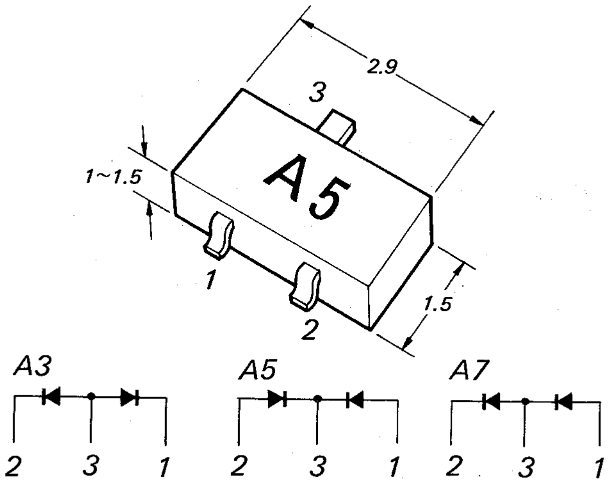
Resistor


electrodes
same color

Laminated Ceramic Capacitor


2.9
Collector
1~1.5
Base
Emitter
1.5

Transistor


2.9
3
1~1.5
A5
1
2
1.5
A3
2 3 1
A5
2 3 1
A7
2 3 1

Diode

Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

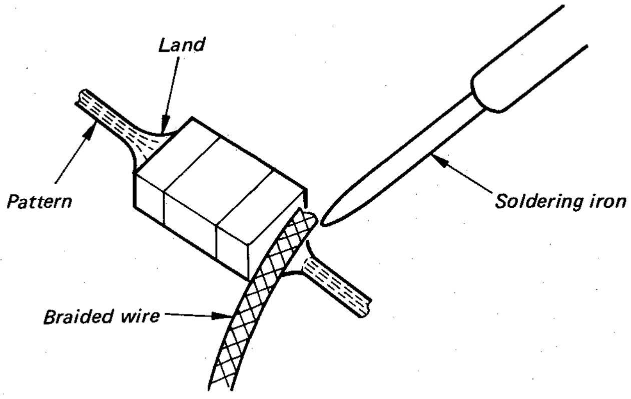
Precautions for replacement

1. **Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.**
2. **Never re-use a disconnected chip component. Dispose of all old chip components.**
3. **To protect the chip component, heating time for attaching the component should be within 3 seconds.**

○ Removing chip components

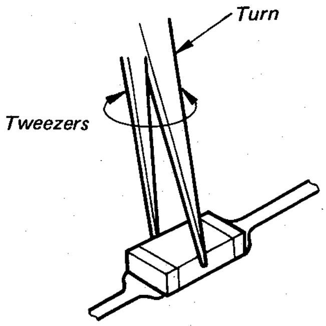
(1) Removing solder at electrode

Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.
Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

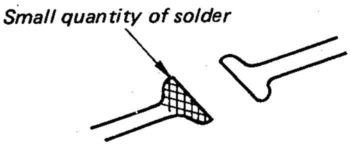
After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

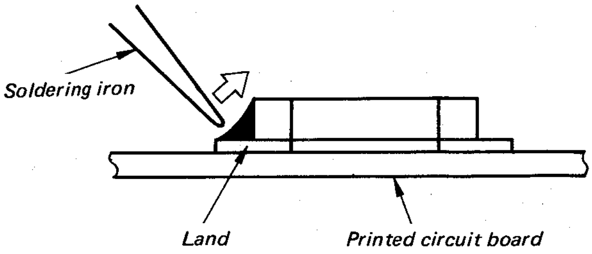
(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



(2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



(3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

1-4. CIRCUIT DESCRIPTION

THE ROLE OF Q312

This circuit is for ensuring that the AUTO PLAY function is carried out properly when the FF or the REW button is kept pressed at tape end. The following operations will be made.

PH301 and PH302 are the diodes for detecting the rotation of the reel tables. These diodes repetitively turn ON and turn OFF Q309 when the reel tables are rotating. When the reel tables stop rotating, Q309 goes OFF and consequently, C312 gets charged via R323. This causes Q310 to turn ON.

When Q310 goes ON, either terminal ⑦ of CP801 goes LOW and consequently the AUTO PLAY operations will be initiated. At this time, CP801 will not accept the tape end detection signal if the FF or the REW button is kept pressed.

When Q310 goes ON, R325 will be grounded thus starting the charging of C317. When C317 gets charged Q312 goes ON. When Q312 goes ON, Q304, 306 – 308 all go OFF and Q310 also gets turned OFF. When Q310 goes OFF, Q312 also goes OFF. When Q312 goes OFF, Q304, 306 – 308 all go ON again and turn Q310 ON again.

After Q310 goes ON, Q312 will also be turned ON after some delay and the above operations will be repeated. These operations will continue as long as the FF or the REW button is kept pressed and when the button is released, the AUTO PLAY operations will be initiated.

ON THE REMOTE CONTROL CIRCUIT

In the FWD/REV mode:

Q316 is ON in the STOP mode and hence Q317 is OFF. Although a high voltage presents at the base of Q318, it does not go ON because Q317 is OFF. Now, if the ▶(FWD) button is pressed, Q316 is OFF and Q317 is ON and hence Q318 is ON. When Q318 goes ON, terminal ③ of the system control IC goes LOW and the set is in FWD mode.

Q302, 313, 314 go ON in the FWD mode and hence the base of Q318 will be grounded turning it OFF, but the FWD state will be continued to be maintained.

Next, when the ▶ button is pressed again, Q316, 317 go ON. At this time, Q319 goes ON because the collector voltage of Q306 will be input to the collector of Q319.

When Q319 goes ON, it makes terminal ⑦ of the system control IC go LOW and consequently the mode will change from the current mode to its opposite mode (FWD → REV or REV → FWD).

Thus, when this terminal is made LOW during the FWD mode or the REV mode, the mode will change to the opposite mode.

In the STOP mode:

In the FWD and REV modes, Q320 is in the ON state. When the STOP button is pressed, Q320 is turned OFF and Q321 is turned ON. As a result, terminal ④ of the system control IC is made LOW and the STOP mode is initiated. At this time,Q320 and Q316 are turned ON again.

When the ▶ button is pressed next, the FWD mode is initiated.

When the ▶ button is pressed in the STOP mode, this machine always go into the FWD mode.

Q315 is used for decreasing the impedance in FWD or REV mode.

ON THE SYSTEM CONTROL CIRCUIT

This circuit identifies the button that was pressed and carries out the operations corresponding to that button. The operations of this circuit will be explained below taking the example of the FWD mode.

When the FWD button is pressed, terminal ㉓ goes Low, and terminal ㉒ goes High thereby making M801 start to rotate. When this happens, terminal ⑰ goes Low. The operations of M801 and S806 are interlinked. The rotation of the motor will be stopped when the three switches' position of S806 go into a specific state (H, L, L in the case of the FWD mode).

At this time, since terminal ⑰ will be Low, Q301 and Q305 will both be in the ON state. Q301 mutes the audio signal so that it is not output to the headphones. Q305 stops the power supply to the servo circuit.

M801 stops rotating and 5 ms passed after then, and terminal ⑰ goes High. This cause M901 to start rotating and reel table.

If the REV button is pressed in the FWD mode, terminal ㉓ goes High and terminal ㉒ goes Low thereby making M801 rotate in the opposite direction. Thereafter, all other operations is identical to that in the FWD mode.

The motor M802 is made to rotate in the FF/REW modes. The operations of M802 and S807 are interlinked. The rotation of M802 is stopped when the position is detected by S807 and the FF/REW mode is initiated by starting M901 to rotate.

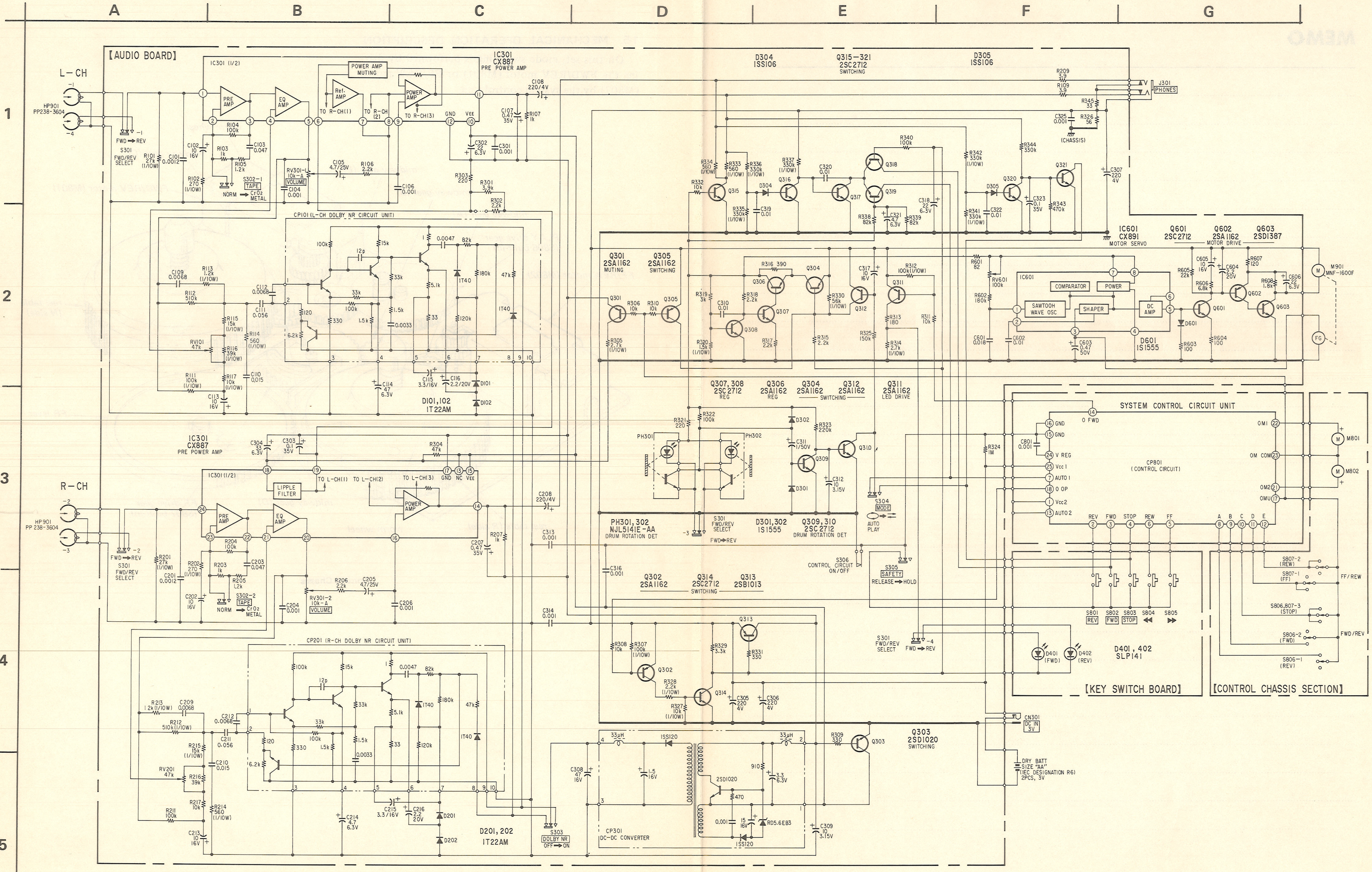
FWD/REV

CP801 terminal No.	Switch	REV	STOP	FWD
⑧	S806-1	L	H	H
⑨	S806-2	H	H	L
⑩	S806-3	L	L	L

FF/REW

CP801 terminal No.	Switch	REW	STOP	FF
⑪	S807-1	H	L	L
⑫	S807-2	L	L	H

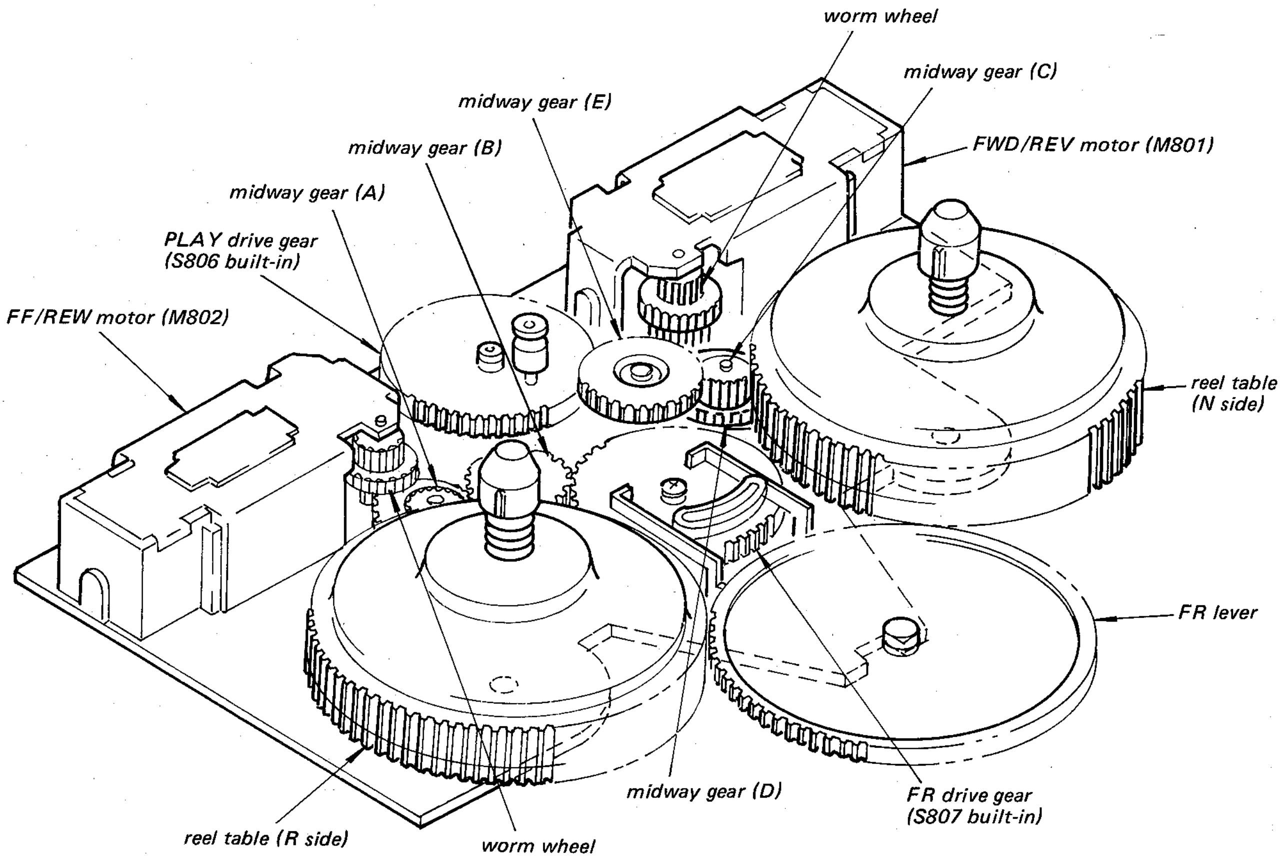
SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
1
2
3
4
5
[AUDIO BOARD]
L-CH
R-CH
HP901
PP238-3604
IC301 (1/2)
IC301
CX887
PRE POWER AMP
PRE AMP
EQ AMP
POWER AMP MUTING
Ref-AMP
POWER AMP
LIPPLE FILTER
TO R-CH(1)
TO R-CH(2)
TO R-CH(3)
TO L-CH(1)
TO L-CH(2)
TO L-CH(3)
GND
VEE
NC
S301
FWD/REV
SELECT
FWD → REV
S302-1
TAPE
NORM → CrO2 METAL
S302-2
RV301-L
10k-A
VOLUME
RV301-2
CP101 (L-CH DOLBY NR CIRCUIT UNIT)
CP201 (R-CH DOLBY NR CIRCUIT UNIT)
D101, 102
1T22AM
D201, 202
1T22AM
S303
DOLBY NR
OFF → ON
D304
1SS106
Q315-321
2SC2712
SWITCHING
D305
1SS106
J301
PHONES
(CHASSIS)
Q301
2SA1162
MUTING
Q305
2SA1162
SWITCHING
IC601
CX891
MOTOR SERVO
Q601
2SC2712
Q602
2SA1162
Q603
2SD1387
MOTOR DRIVE
M901
MNF-1600F
COMPARATOR
POWER
SAWTOOH WAVE OSC
SHAPER
DC AMP
D601
1S1555
FG
Q307, 308
2SC2712
REG
Q306
2SA1162
REG
Q304
2SA1162
Q312
2SA1162
SWITCHING
Q311
2SA1162
LED DRIVE
PH301
PH302
PH301, 302
NJL5141E-AA
DRUM ROTATION DET
D301, 302
1S1555
Q309, 310
2SC2712
DRUM ROTATION DET
S304
MODE
AUTO PLAY
S306
CONTROL CIRCUIT
ON/OFF
S305
SAFETY
RELEASE → HOLD
SYSTEM CONTROL CIRCUIT UNIT
CP801
(CONTROL CIRCUIT)
O FWD
GND
V REG
Vcc 1
AUTO 1
O OP
Vcc2
AUTO 2
OM1
OM COM
OM2
OMU
REV
FWD
STOP
REW
FF
M801
M802
S807-2
(REW)
S807-1
(FF)
FF/REW
S806, 807-3
(STOP)
S806-2
(FWD)
S806-1
(REV)
FWD/REV
S801
REV
S802
FWD
S803
STOP
S804
S805
D401, 402
SLP141
D401
(FWD)
D402
(REV)
[KEY SWITCH BOARD]
[CONTROL CHASSIS SECTION]
Q302
2SA1162
Q314
2SC2712
SWITCHING
Q313
2SB1013
CN301
DC IN
3V
Q303
2SD1020
SWITCHING
DRY BATT
SIZE "AA"
(IEC DESIGNATION R6)
2PCS, 3V
CP301
DC-DC CONVERTER
2SD1020
RD5.6EB3
1SS120

MEMO

1-5. MECHANICAL OPERATION DESCRIPTION

On this set, mode switching is performed by driving the FWD/REV motor (M801) or FF/REW motor (M802) by the system control unit.


worm wheel
midway gear (C)
midway gear (E)
FWD/REV motor (M801)
midway gear (B)
midway gear (A)
PLAY drive gear
(S806 built-in)
FF/REW motor (M802)
reel table
(N side)
FR lever
midway gear (D)
FR drive gear
(S807 built-in)
reel table (R side)
worm wheel

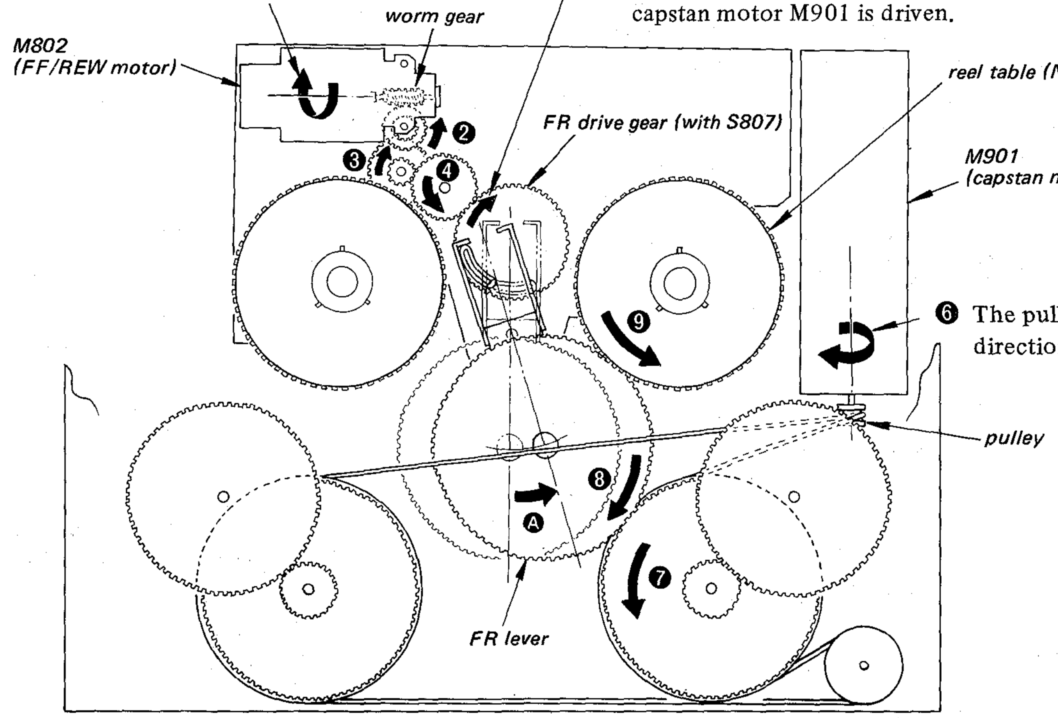
Control Chassis

FF MODE

The operation is in numerical order.

❶ When the FF button is pressed, the motor (M802) is rotated in the direction of the arrow by the system control unit.

❺ When the FR drive gear rotates in the direction of the arrow, the FR lever swings in the direction of arrow 🅐 , and at the same time the built-in switch (S807) goes into the FF position, and the capstan motor M901 is driven.


worm gear
M802
(FF/REW motor)
FR drive gear (with S807)
reel table (N side)
M901
(capstan motor)
pulley
FR lever
❷
❸
❹
❼
❽
❾
🅐

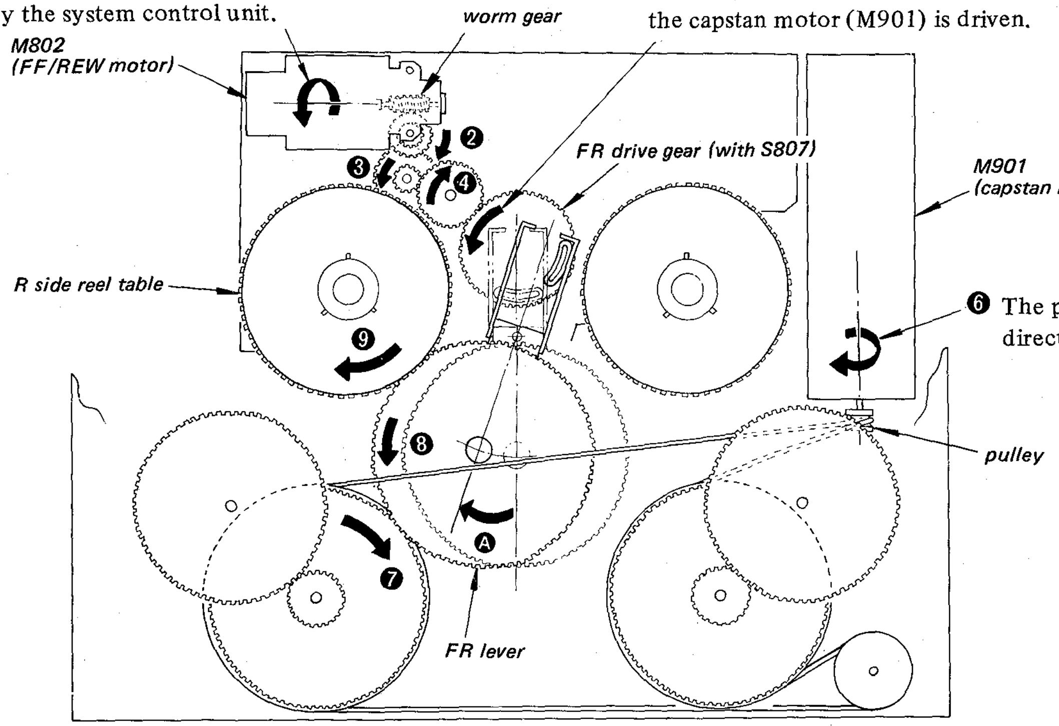
❻ The pulley rotates in the direction of the arrow.

REW MODE

The operation is in numerical order.

❶ When the REW button is pressed, the motor (M802) is rotated in the direction of the arrow by the system control unit.

❺ When the FR drive gear rotates in the direction of the arrow, the FR lever swings in the direction of arrow 🅐 , and at the same time the built-in switch (S807) goes into the REW position, and the capstan motor (M901) is driven.


worm gear
M802
(FF/REW motor)
FR drive gear (with S807)
M901
(capstan motor)
R side reel table
pulley
FR lever
❷
❸
❹
❼
❽
❾
🅐

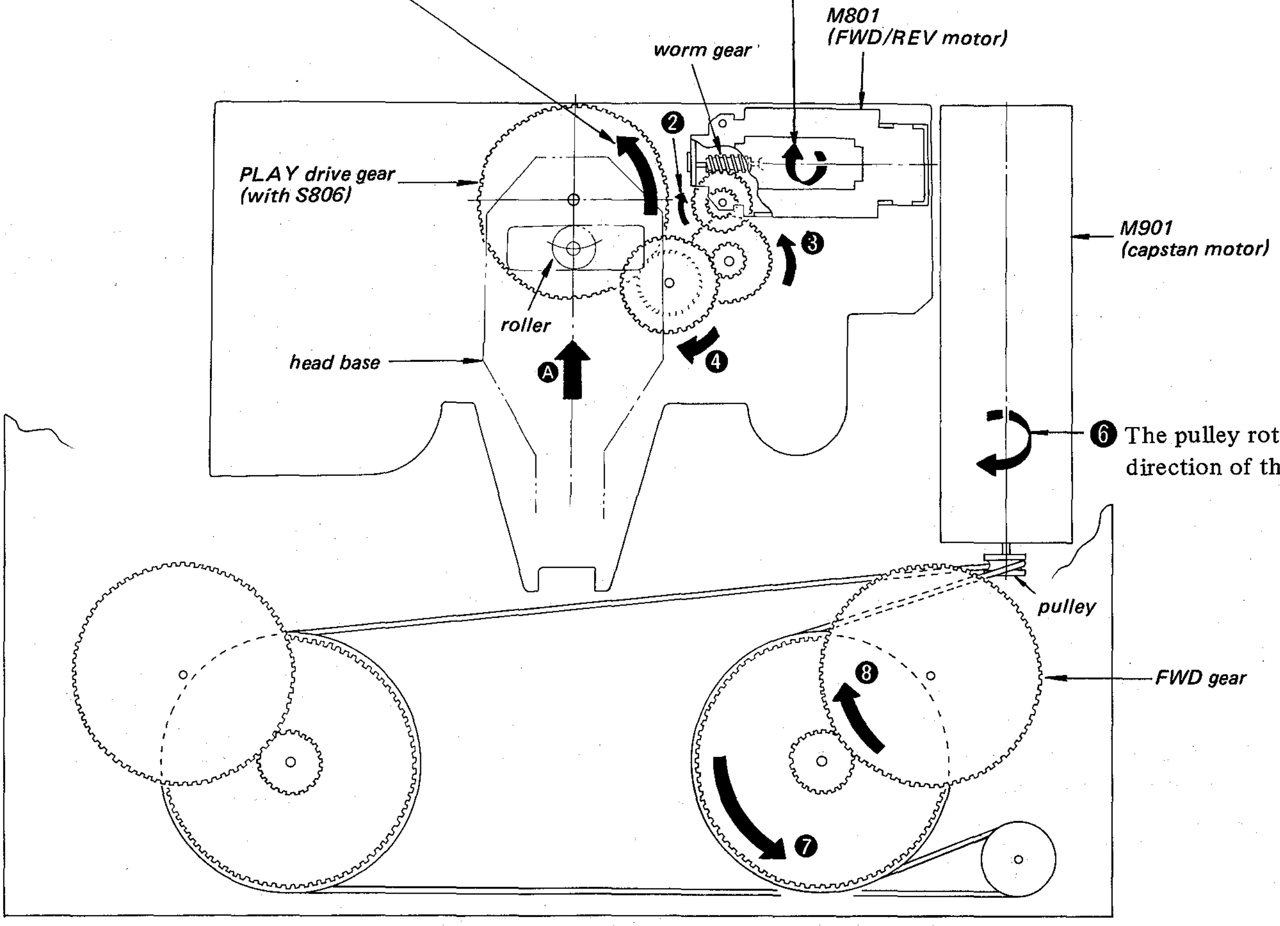
❻ The pulley rotates in the direction of the arrow.

FWD MODE

The operation is in numerical order.

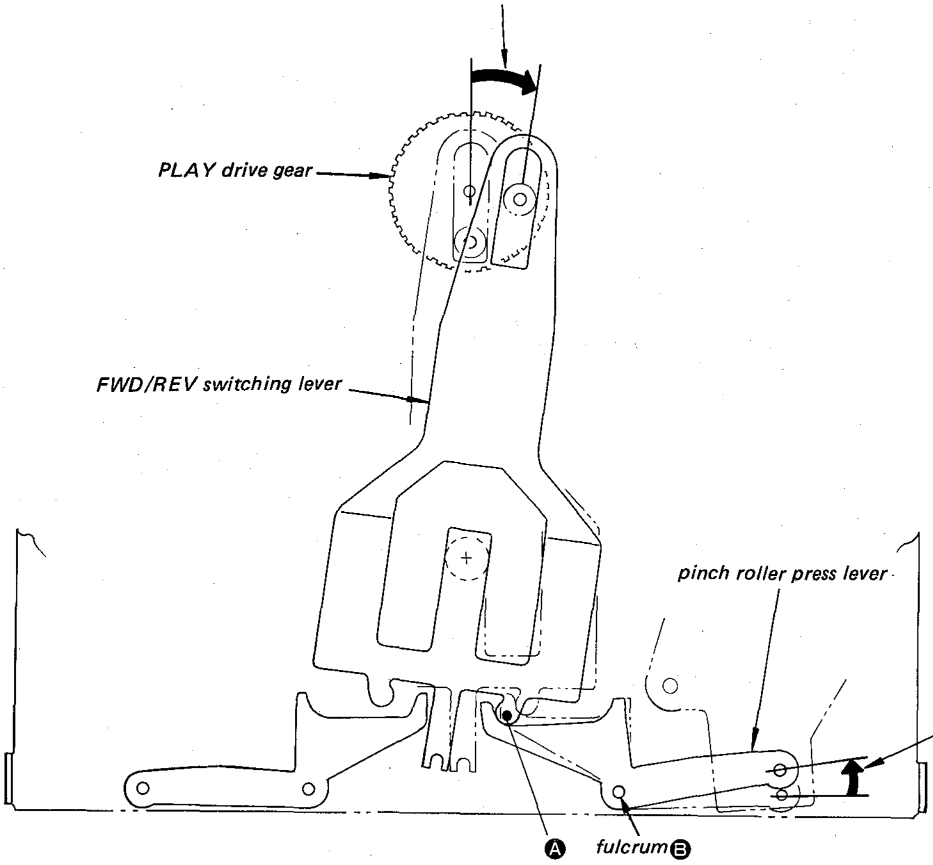
⑤ When the PLAY drive gear rotates in the direction of the arrow, the roller moves the head base in the direction of arrow Ⓐ . At the same time, the built-in switch (S806) goes into the FWD position, and the capstan motor (M901) is driven.

① When the FWD button is pressed, the motor (M801) is rotated in the direction of the arrow by the system control unit.

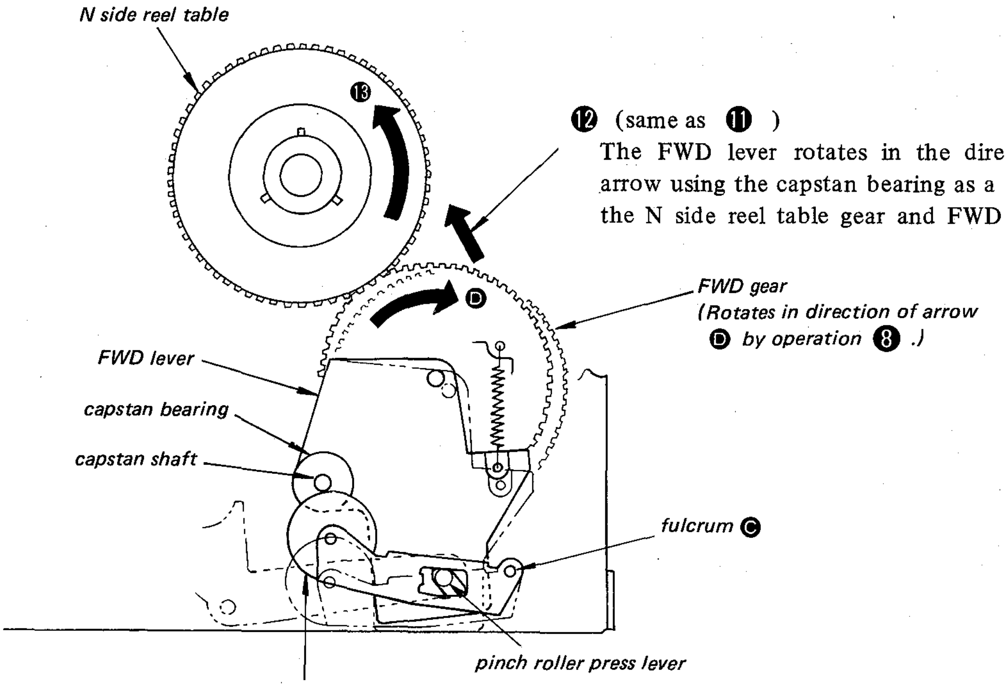

worm gear
M801
(FWD/REV motor)
②
PLAY drive gear
(with S806)
③
M901
(capstan motor)
roller
④
head base
Ⓐ
pulley
⑧
FWD gear
⑦

⑥ The pulley rotates in the direction of the arrow.

❾ The FWD/REV switching lever is rotated in the direction of the arrow by the operation in ❺.


PLAY drive gear
FWD/REV switching lever
pinch roller press lever
🅐
fulcrum🅑

❿ The pinch roller press lever rotates in the direction of arrow by section 🅐 using fulcrum 🅑 as its axis.


N side reel table
⓭
🅓
FWD lever
capstan bearing
capstan shaft
fulcrum 🅒
pinch roller press lever

⓬ (same as ⓫)
The FWD lever rotates in the direction of the arrow using the capstan bearing as a fulcrum, and the N side reel table gear and FWD gear engage.

FWD gear
(Rotates in direction of arrow 🅓 by operation ❽ .)

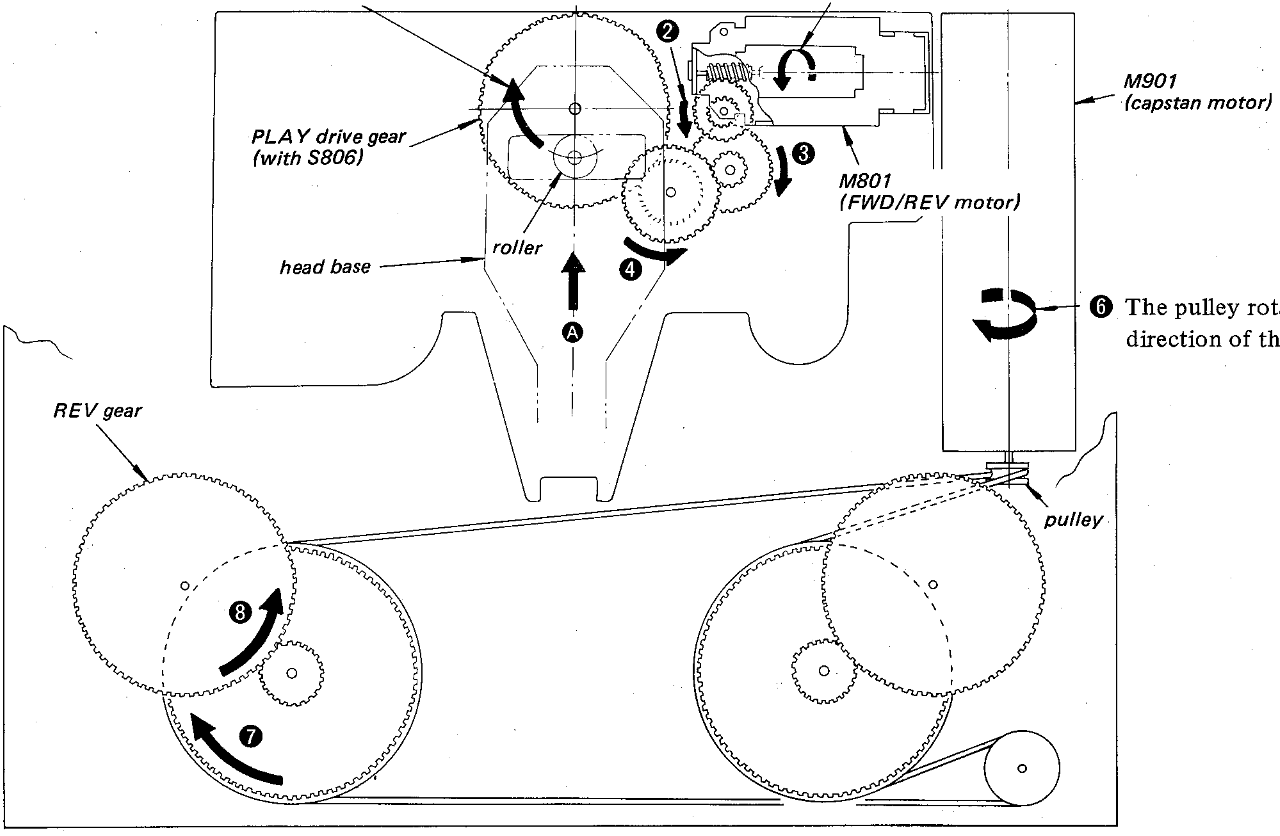
⓫ The pinch roller presses against the capstan shaft using fulcrum 🅒 as its axis.

REV MODE

The operation is in numerical order.

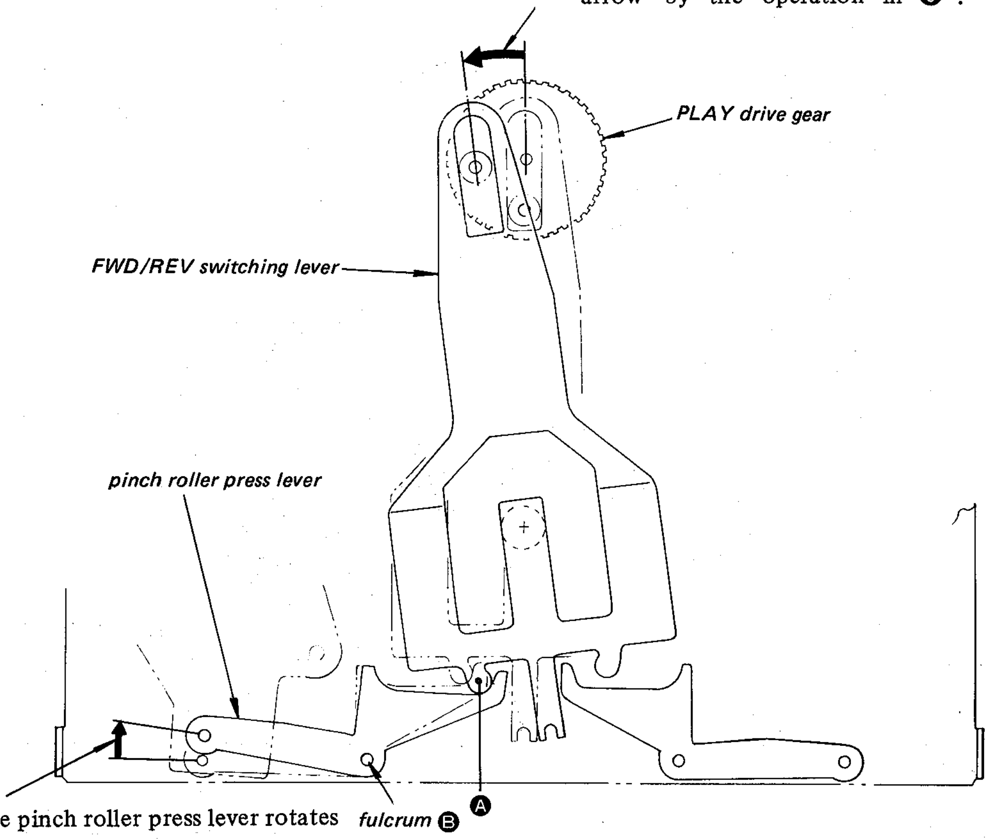
⑤ The PLAY drive gear rotates in the direction of the arrow, and the roller moves the head base in the direction of arrow Ⓐ . At the same time, the built-in switch (S806) goes into REV position, and the capstan motor (M901) is driven.

① When the REV button is pressed, the motor (M801) is rotated in the direction of the arrow by the system control unit.


②
M901
(capstan motor)
PLAY drive gear
(with S806)
③
M801
(FWD/REV motor)
roller
head base
④
Ⓐ
REV gear
pulley
⑧
⑦

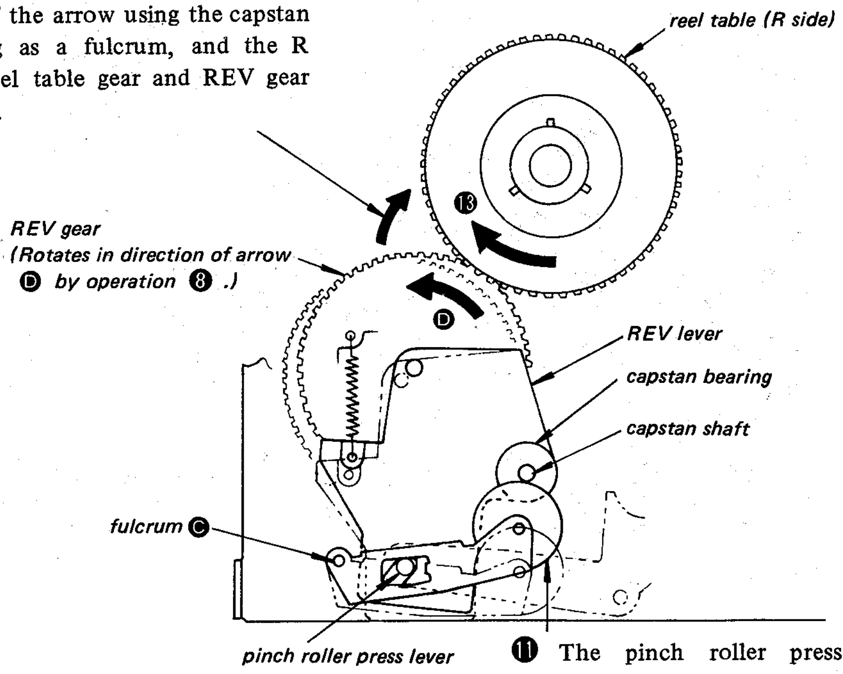
⑥ The pulley rotates in the direction of the arrow.

⑨ The FWD/REV switching lever is rotated in the direction of the arrow by the operation in ⑤ .


PLAY drive gear
FWD/REV switching lever
pinch roller press lever
fulcrum Ⓑ
Ⓐ

⑩ The pinch roller press lever rotates in the direction of the arrow using fulcrum Ⓑ as its axis.

⑫ (same as ⑪)
The REV lever rotates in the direction of the arrow using the capstan bearing as a fulcrum, and the R side reel table gear and REV gear engage.

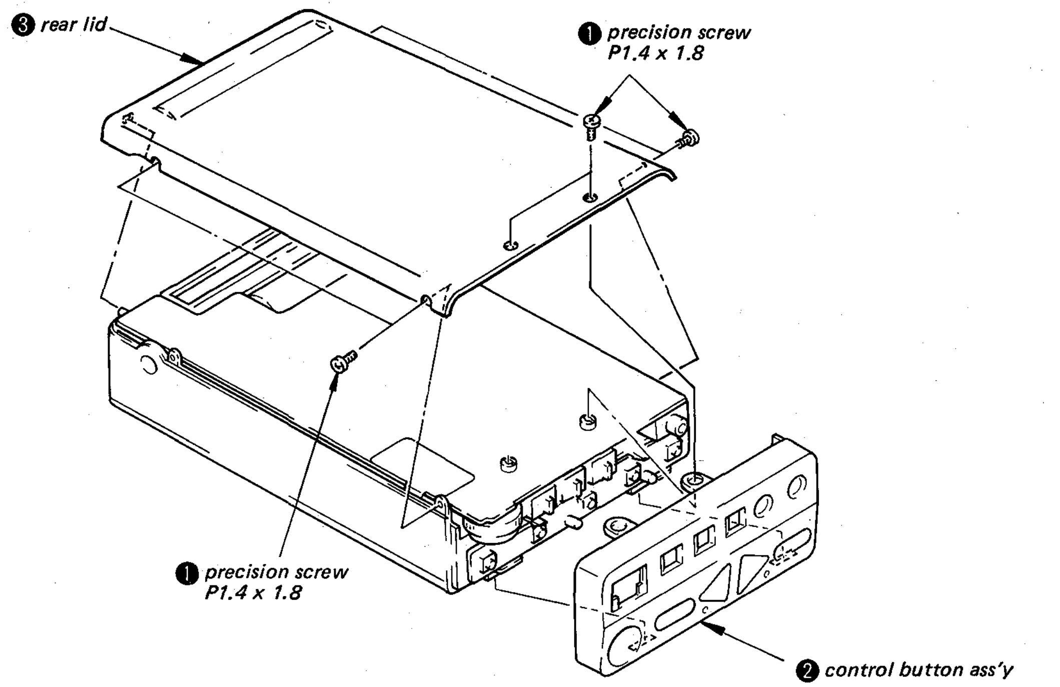

reel table (R side)
⑬
REV gear
(Rotates in direction of arrow
Ⓓ by operation ⑧ .)
Ⓓ
REV lever
capstan bearing
capstan shaft
fulcrum Ⓒ
pinch roller press lever

⑪ The pinch roller presses against the capstan shaft using fulcrum Ⓒ as its axis.

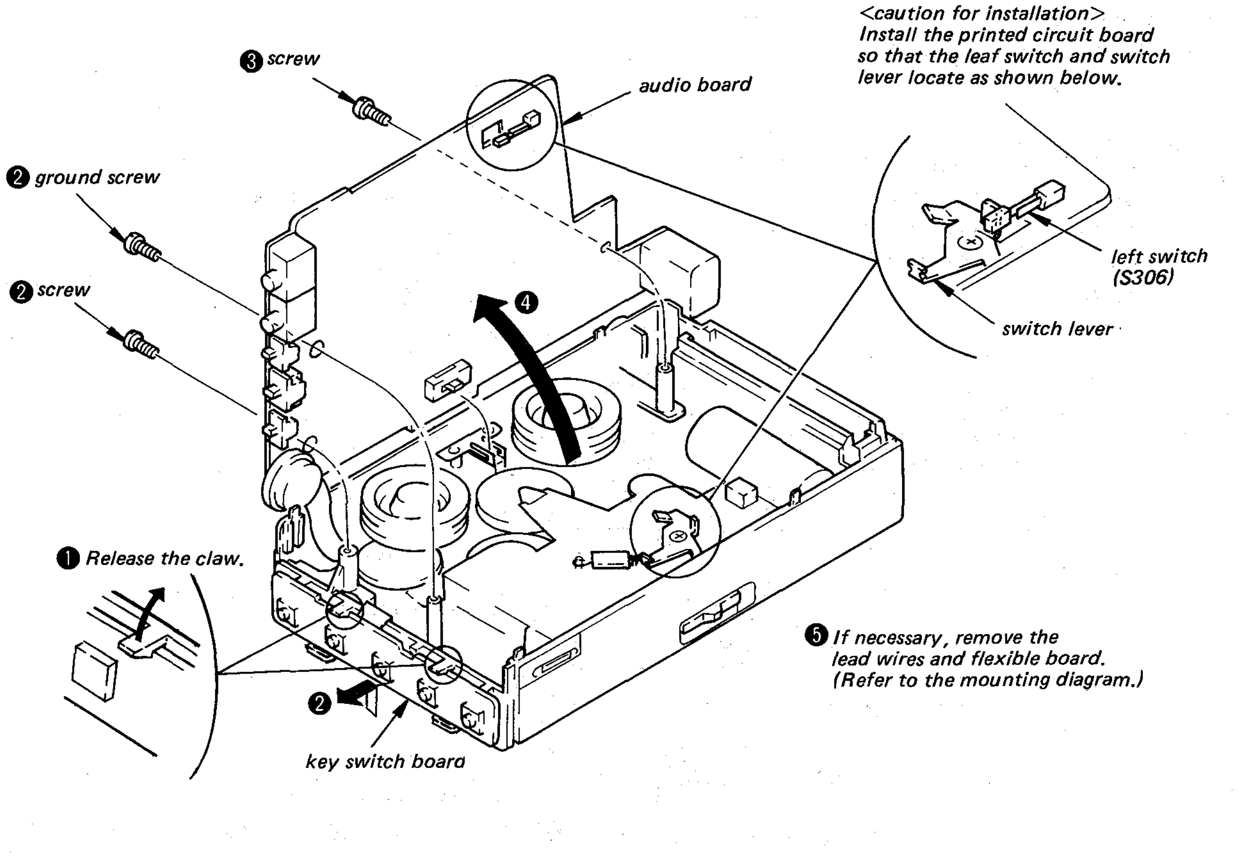
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

REAR LID


❸ rear lid
❶ precision screw
P1.4 x 1.8
❶ precision screw
P1.4 x 1.8
❷ control button ass'y

AUDIO BOARD

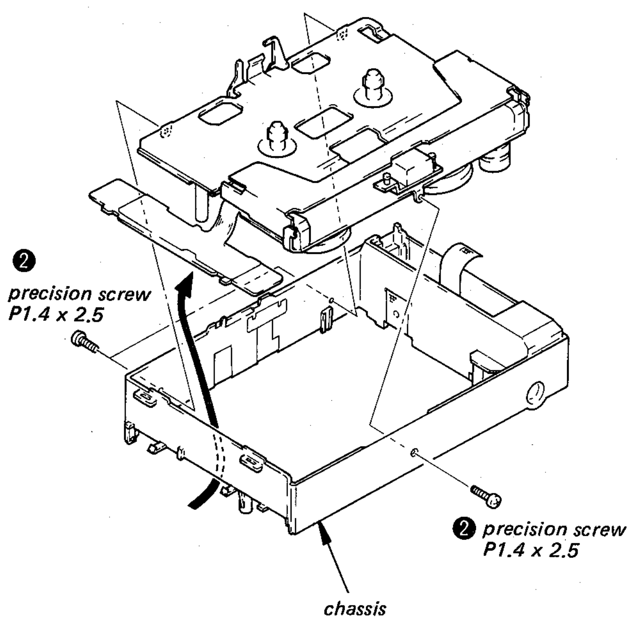

❸ screw
audio board
❷ ground screw
❷ screw
❹
❶ Release the claw.
❷
key switch board
left switch
(S306)
switch lever

<caution for installation>
Install the printed circuit board so that the leaf switch and switch lever locate as shown below.

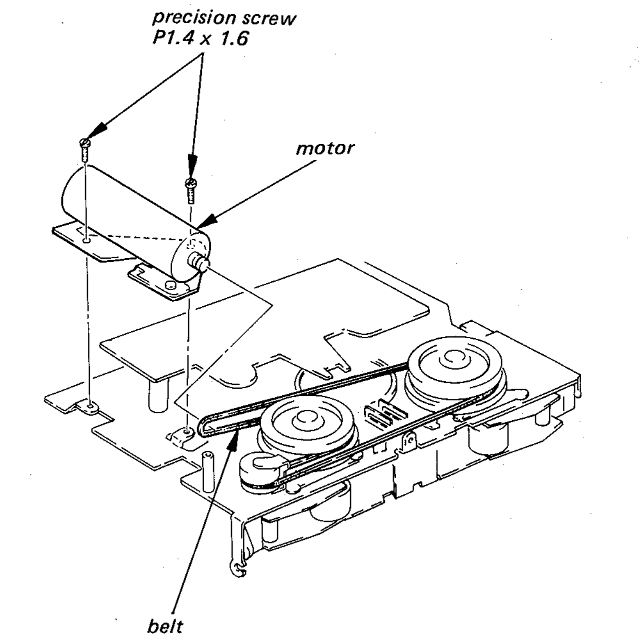
❺ *If necessary, remove the lead wires and flexible board. (Refer to the mounting diagram.)*

CHASSIS

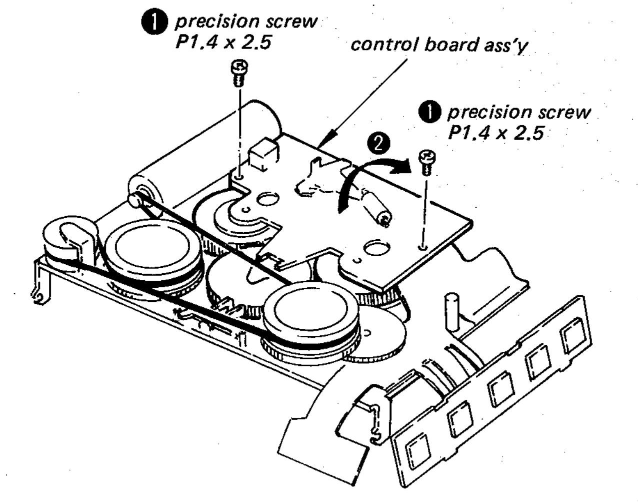
❶ Remove the audio board.


❷ precision screw
P1.4 x 2.5
❷ precision screw
P1.4 x 2.5
chassis

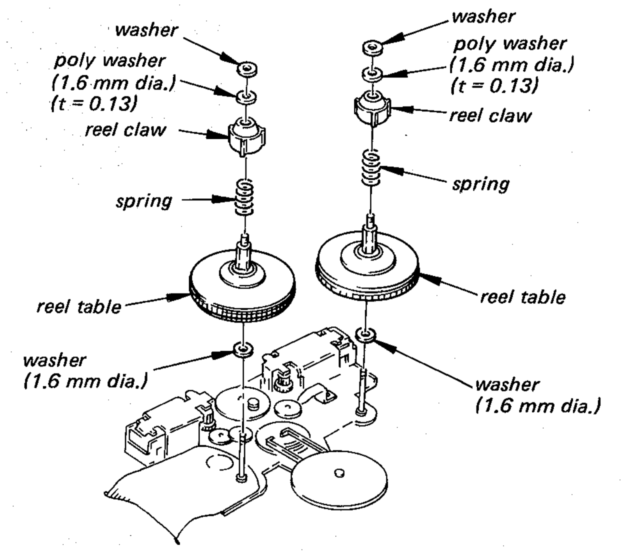
MOTOR REMOVAL AND BELT INSTALLATION


precision screw
P1.4 x 1.6
motor
belt

CONTROL BOARD


❶ precision screw
P1.4 x 2.5
control board ass'y
❶ precision screw
P1.4 x 2.5
❷

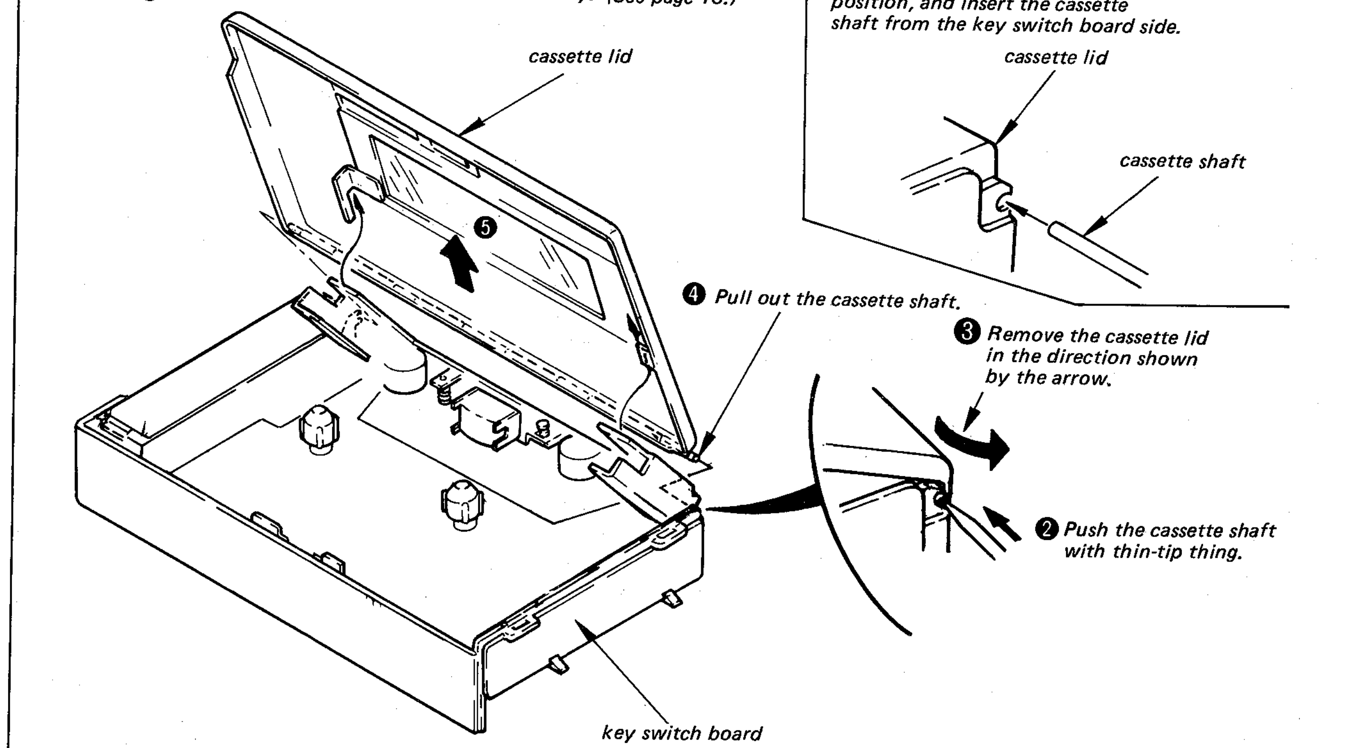
REEL TABLE


washer
poly washer
(1.6 mm dia.)
(t = 0.13)
reel claw
spring
reel table
washer
(1.6 mm dia.)
washer
poly washer
(1.6 mm dia.)
(t = 0.13)
reel claw
spring
reel table
washer
(1.6 mm dia.)

CASSETTE LID

❶ Remove the rear lid and control button ass'y. (See page 18.)

<caution for installation>
Set the cassette lid in the installing position, and insert the cassette shaft from the key switch board side.


cassette lid
cassette lid
cassette shaft
❺
key switch board

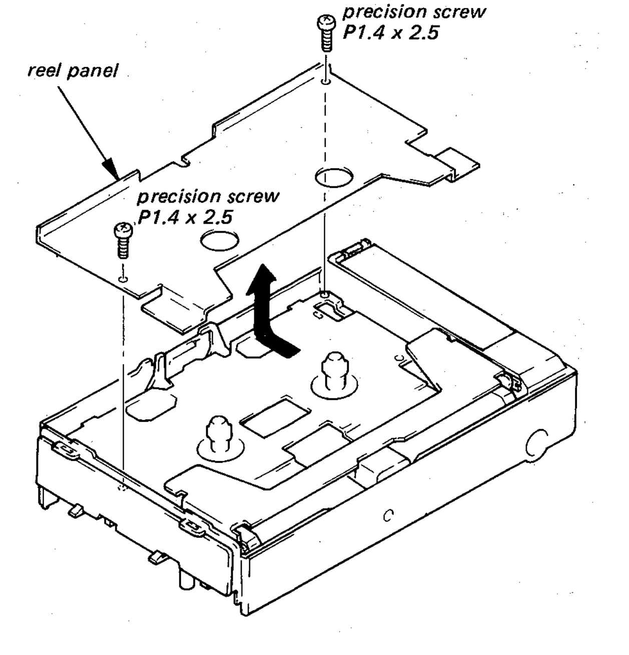
❹ Pull out the cassette shaft.

❸ Remove the cassette lid in the direction shown by the arrow.

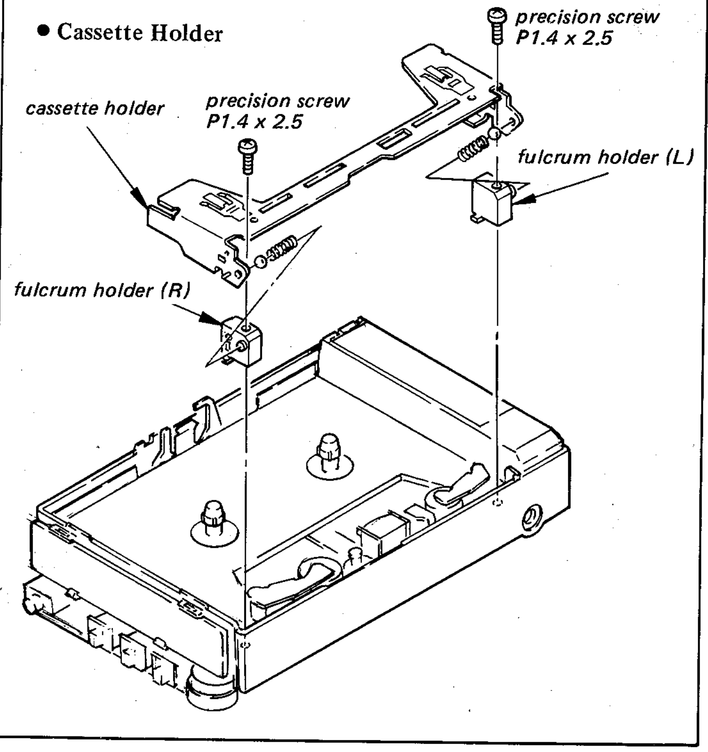
❷ Push the cassette shaft with thin-tip thing.

REEL PANEL/CASSETTE HOLDER

- **Reel Panel**

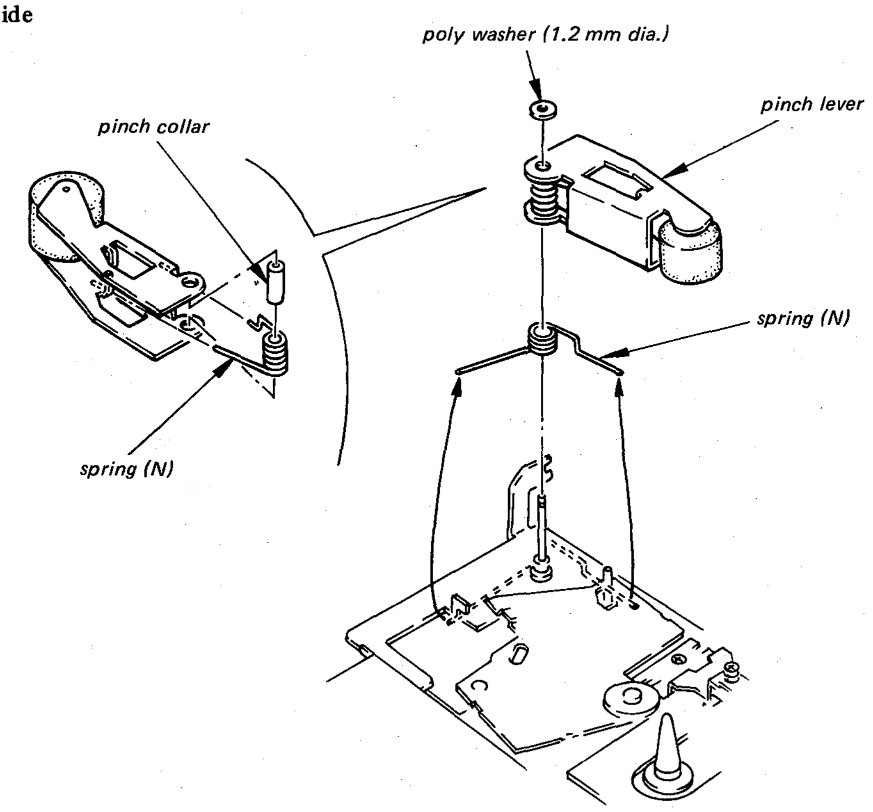

precision screw
P1.4 x 2.5
reel panel
precision screw
P1.4 x 2.5

- **Cassette Holder**

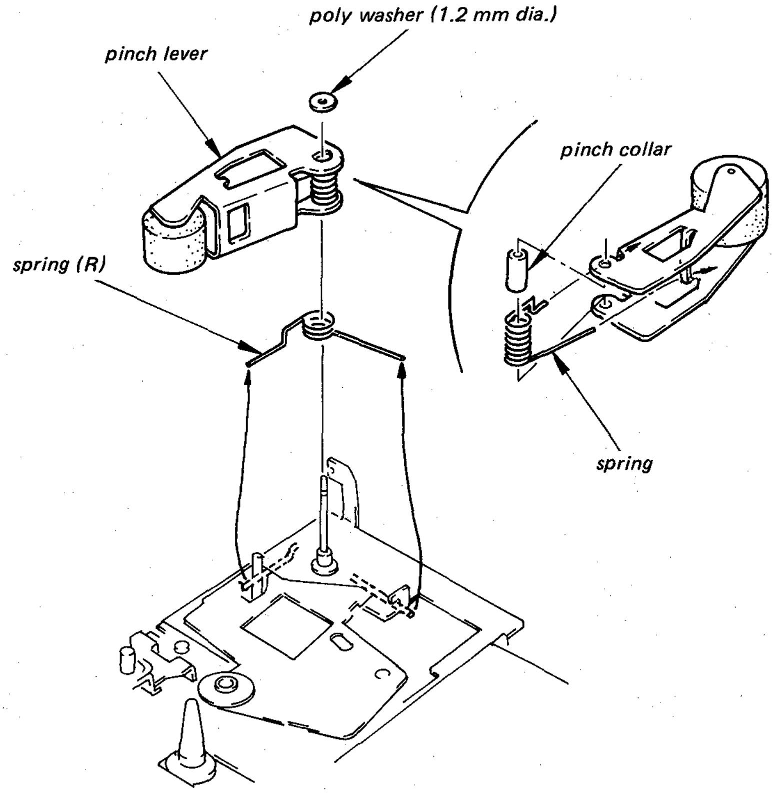

precision screw
P1.4 x 2.5
cassette holder
precision screw
P1.4 x 2.5
fulcrum holder (L)
fulcrum holder (R)

PINCH ROLLER

- **FWD Side**


poly washer (1.2 mm dia.)
pinch lever
pinch collar
spring (N)
spring (N)

- **REVERSE Side**


poly washer (1.2 mm dia.)
pinch lever
pinch collar
spring (R)
spring

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS
PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

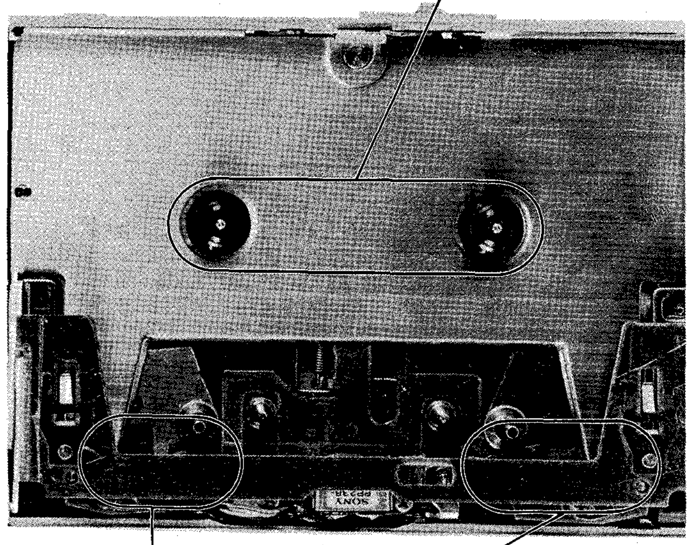
record/playback head	pinch roller
	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Power voltage: DC 2.5 V

	Torque meter	Meter reading
FWD, REV	CQ-102B, 102RB	22 – 36 g · cm
FF, REW	CQ-201B	55 g · cm and more
Back Tension	CQ-102C	less than 3 – 5 g · cm
Tape Tension	CQ-403, 403R	60 g and more



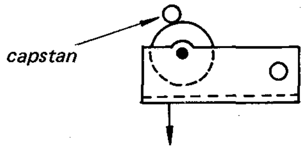
Pinch Roller Pressure Measurement

FWD mode

Hook the tension gauge in the direction shown by the arrow and move the pinch roller away from the capstan.

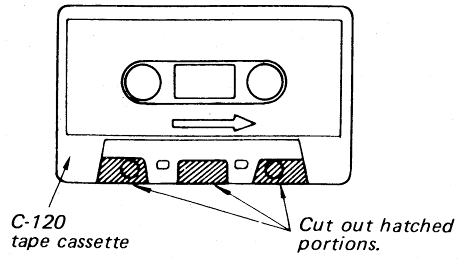
Then, return the pinch roller to the capstan gradually and read the scale, just when the pinch roller starts to rotate again.

Specification: 150 – 190 g

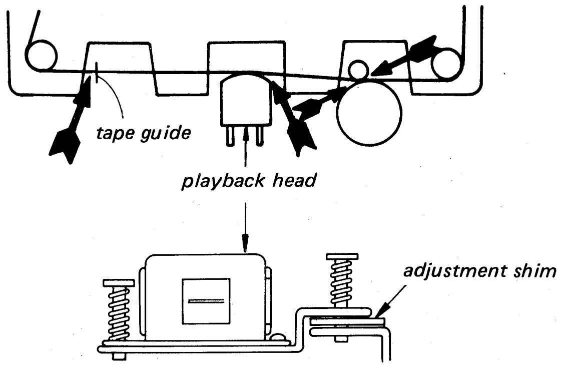


Head Height Adjustment

1. Prepare an adjustment cassette as shown below.


C-120
tape cassette
Cut out hatched
portions.

2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.


tape guide
playback head
adjustment shim

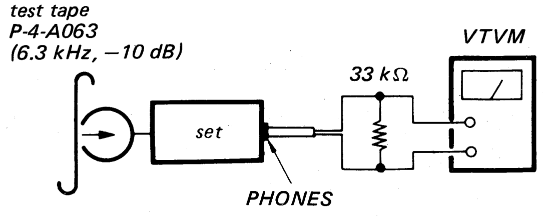
Shim, head height adjustment

Part No.	t
3-310-031-01	0.2
3-310-031-11	0.4
3-310-031-21	0.8
3-310-031-31	1.0

Playback Head Azimuth Adjustment

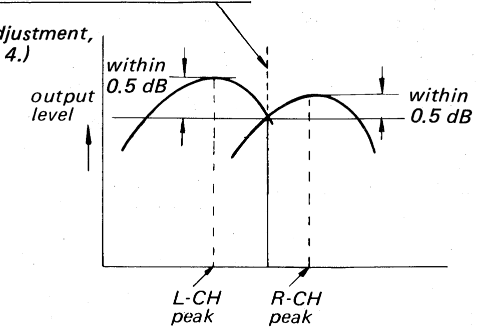
Procedure:

1. Mode: REV


test tape
P-4-A063
(6.3 kHz, −10 dB)
VTVM
33 kΩ
set
PHONES

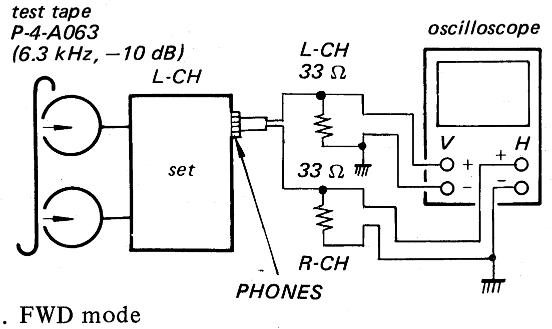
2. Turn the adjustment screw Ⓐ for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

(After this adjustment, perform step 4.)



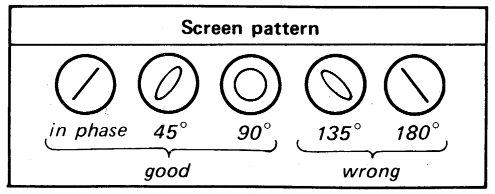
3. Phase Check

Mode: playback

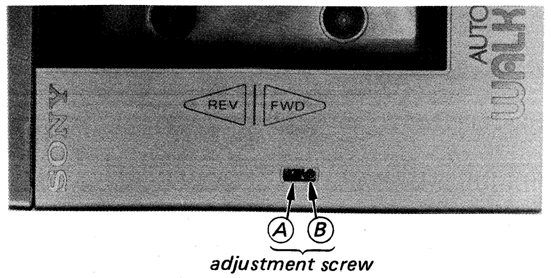

test tape
P-4-A063
(6.3 kHz, −10 dB)
L-CH
set
L-CH
33 Ω
33 Ω
R-CH
PHONES
oscilloscope
V
H
+
−
+
−

4. FWD mode

Repeat step 1-3. (with adjustment screw Ⓑ)


Screen pattern
in phase
45°
90°
135°
180°
good
wrong

Adjustment Location:


SONY
REV
FWD
AUTO
WALK
Ⓐ Ⓑ
adjustment screw

3-2. ELECTRICAL ADJUSTMENTS

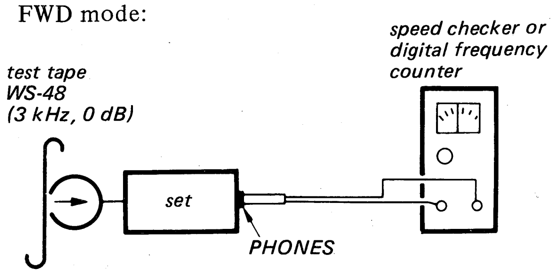
Tape Speed Adjustment

Setting:

VOLUME knob: mechanical mid.

Procedure:

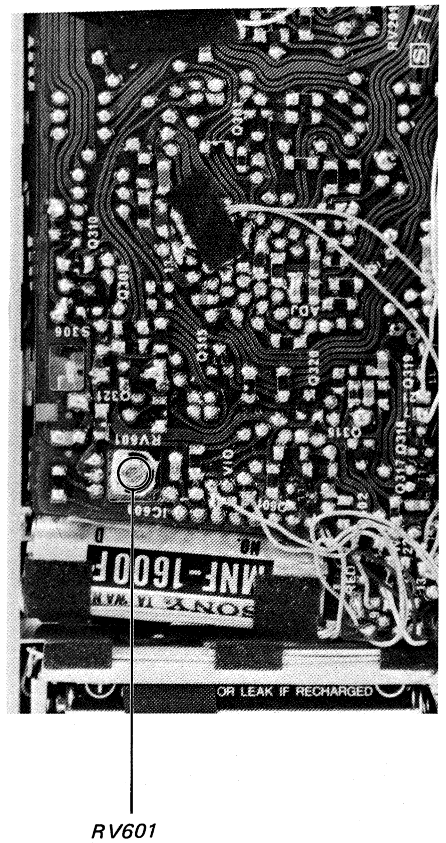
FWD mode:


speed checker or
digital frequency
counter
test tape
WS-48
(3 kHz, 0 dB)
set
PHONES

Specification:

Speed checker	Digital frequency counter
±1 %	2,970 to 3,030 Hz

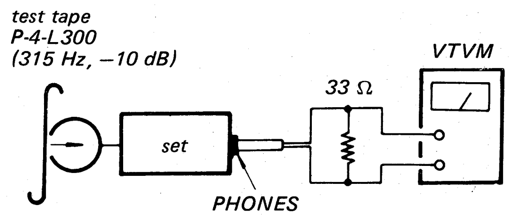
Adjustment Location: Audio board



Dolby Level Adjustment

Procedure:

FWD mode

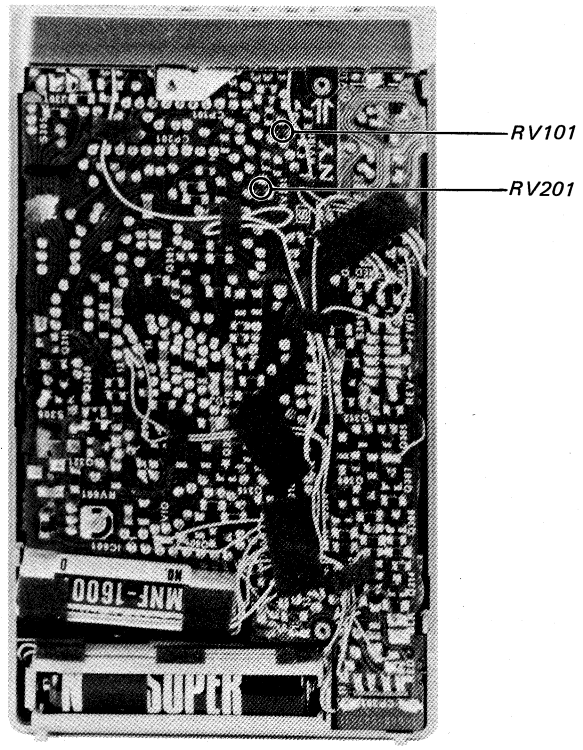

test tape
P-4-L300
(315 Hz, −10 dB)
VTVM
33 Ω
set
PHONES

Specification:

PHONES level: −20 to −18 dB

1) If the level does not obtain the specification, adjust RV101, 201.
2) If the levels are different in FWD and REV, take the midium.

Adjustment Location: Audio board


RV101
RV201

Muting

Setting:

Powe
Conr

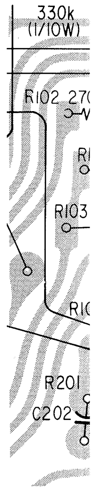
Procedu

Playl

P-4-L30(
(315 Hz,

If tl
unsolde

Adjustm


330k
(1/10W)
R102 27(
R103
R201
C202

3-2. ELECTRICAL ADJUSTMENTS

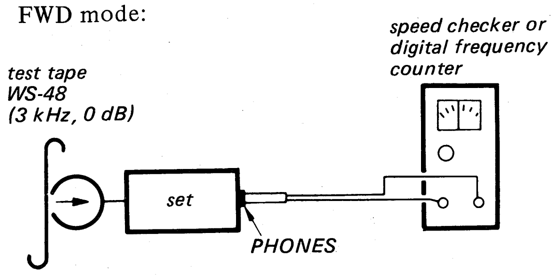
Tape Speed Adjustment

Setting:

VOLUME knob: mechanical mid.

Procedure:

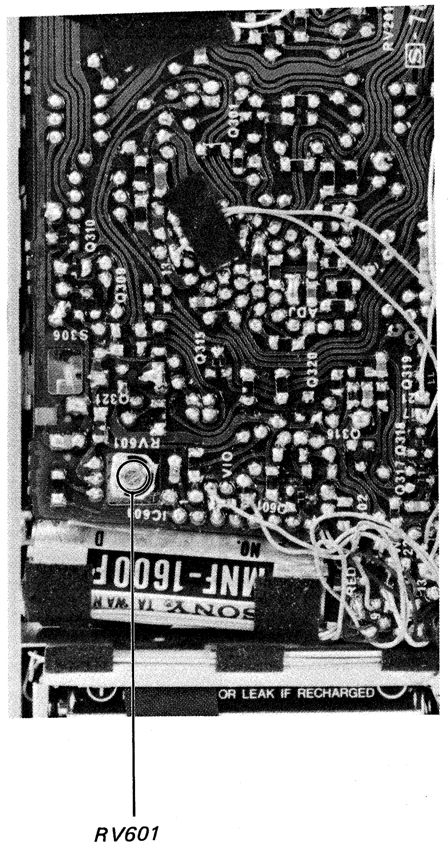
FWD mode:


test tape
WS-48
(3 kHz, 0 dB)
set
PHONES
speed checker or
digital frequency
counter

Specification:

Speed checker	Digital frequency counter
±1 %	2,970 to 3,030 Hz

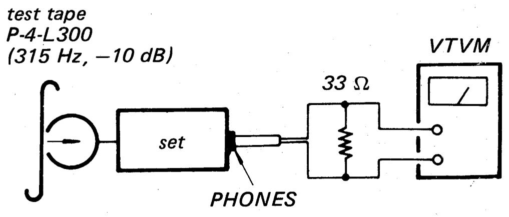
Adjustment Location: Audio board



Dolby Level Adjustment

Procedure:

FWD mode

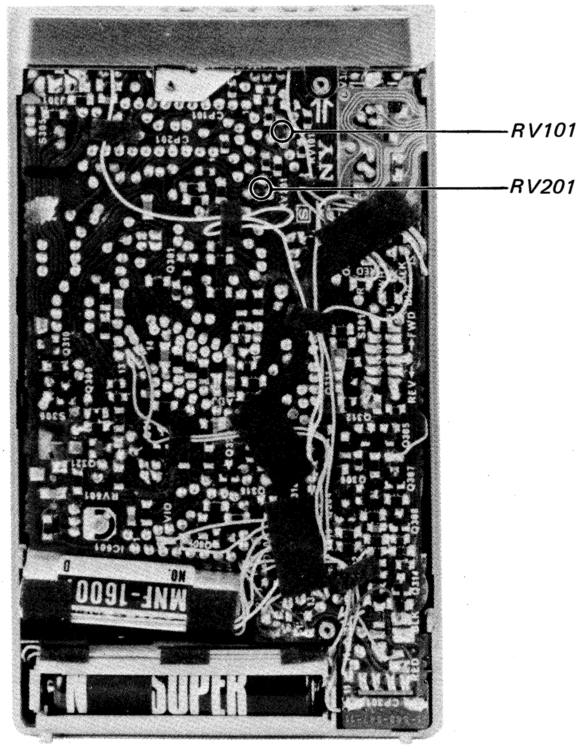

test tape
P-4-L300
(315 Hz, −10 dB)
set
PHONES
33 Ω
VTVM

Specification:

PHONES level: −20 to −18 dB

1) If the level does not obtain the specification, adjust RV101, 201.
2) If the levels are different in FWD and REV, take the midium.

Adjustment Location: Audio board


RV101
RV201

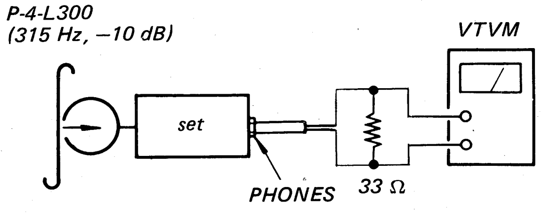
Muting Adjustment

Setting:

Power voltage: 1.9 V
Connect the portion marked by Ⓐ .

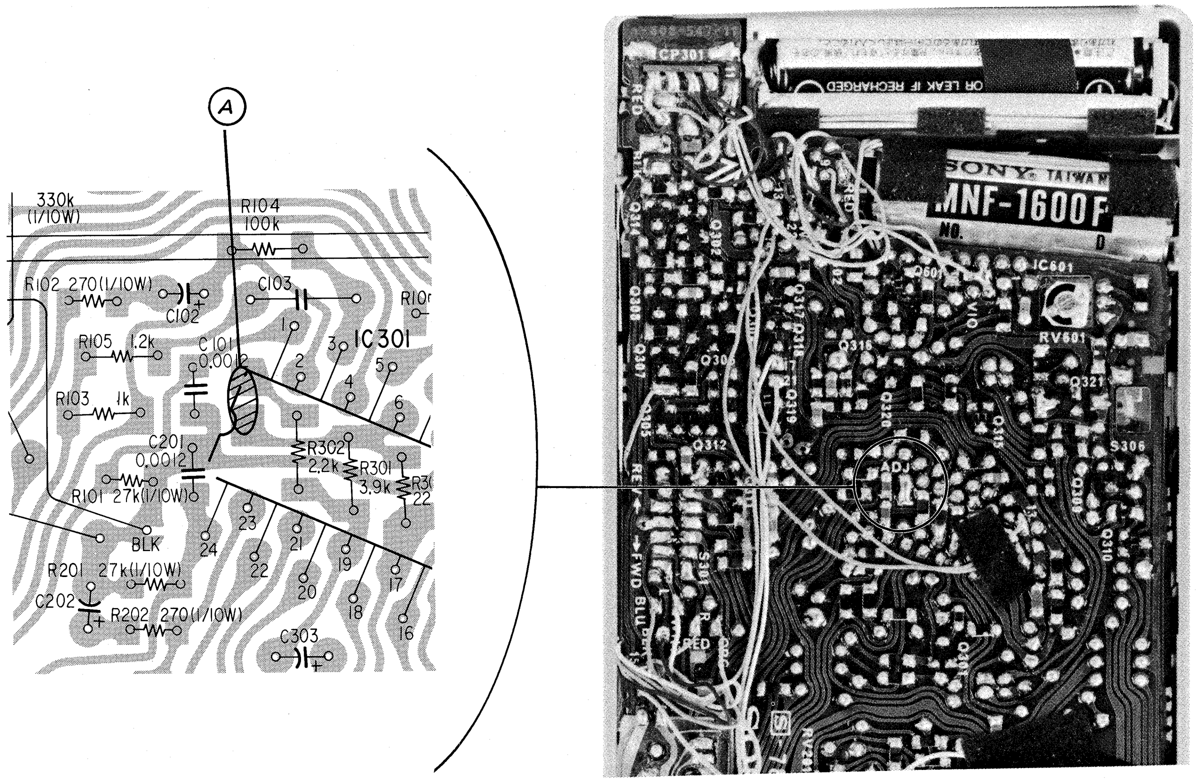
Procedure:

Playback mode


P-4-L300
(315 Hz, −10 dB)
set
PHONES
33 Ω
VTVM

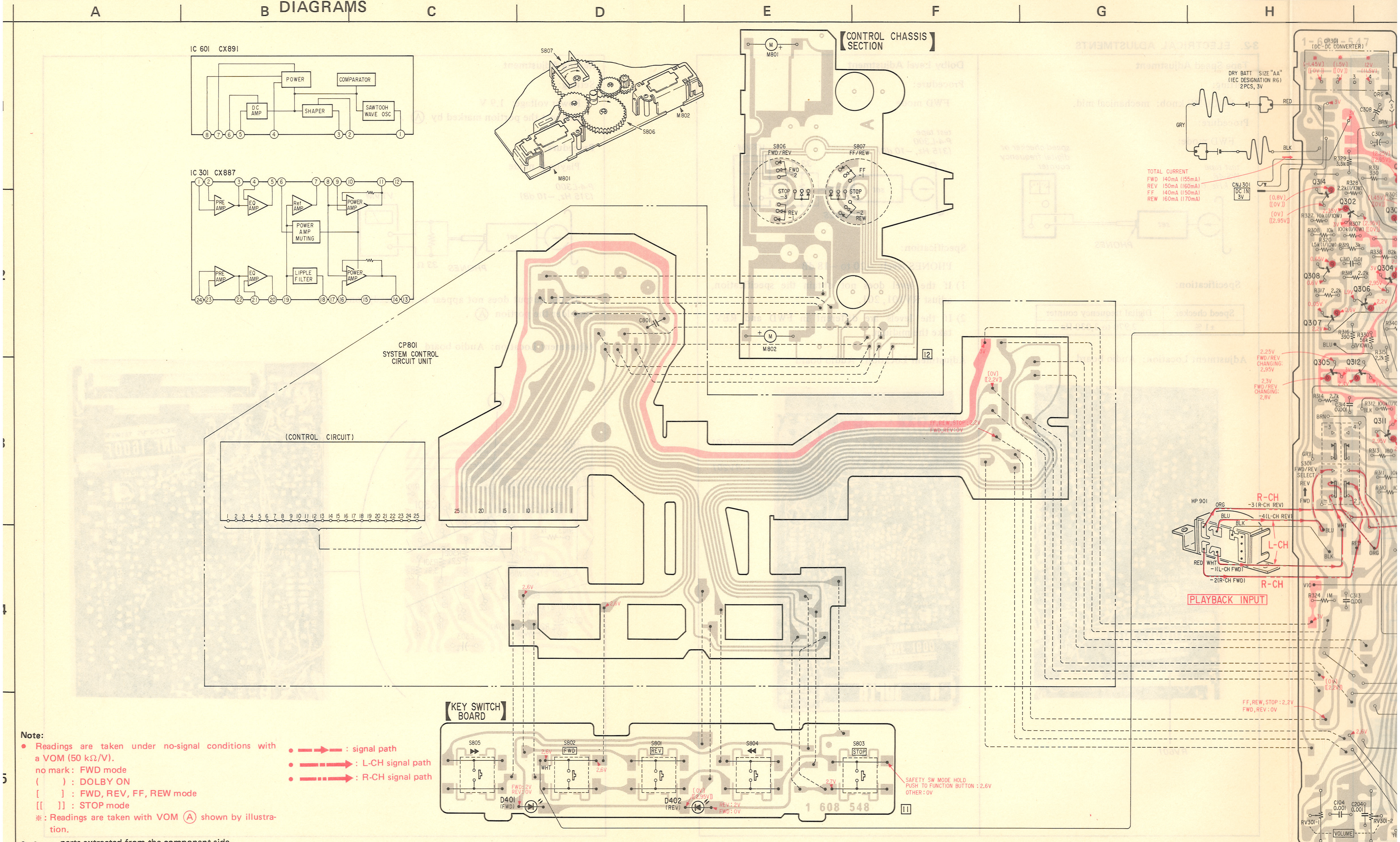
If the output does not appear in the headphones, unsolder the portion Ⓐ .

Adjustment Location: Audio board


A
330k (1/10W)
R104 100k
R102 270(1/10W)
C102
C103
R105 1.2k
C101 0.001
IC301
R103 1k
C201 0.0012
R302 2.2k
R301 3.9k
R101 27k(1/10W)
BLK
R201 27k(1/10W)
C202
R202 270(1/10W)
C303
RV601
IC601
MNF-1600F

4-1. MOUNTING DIAGRAM

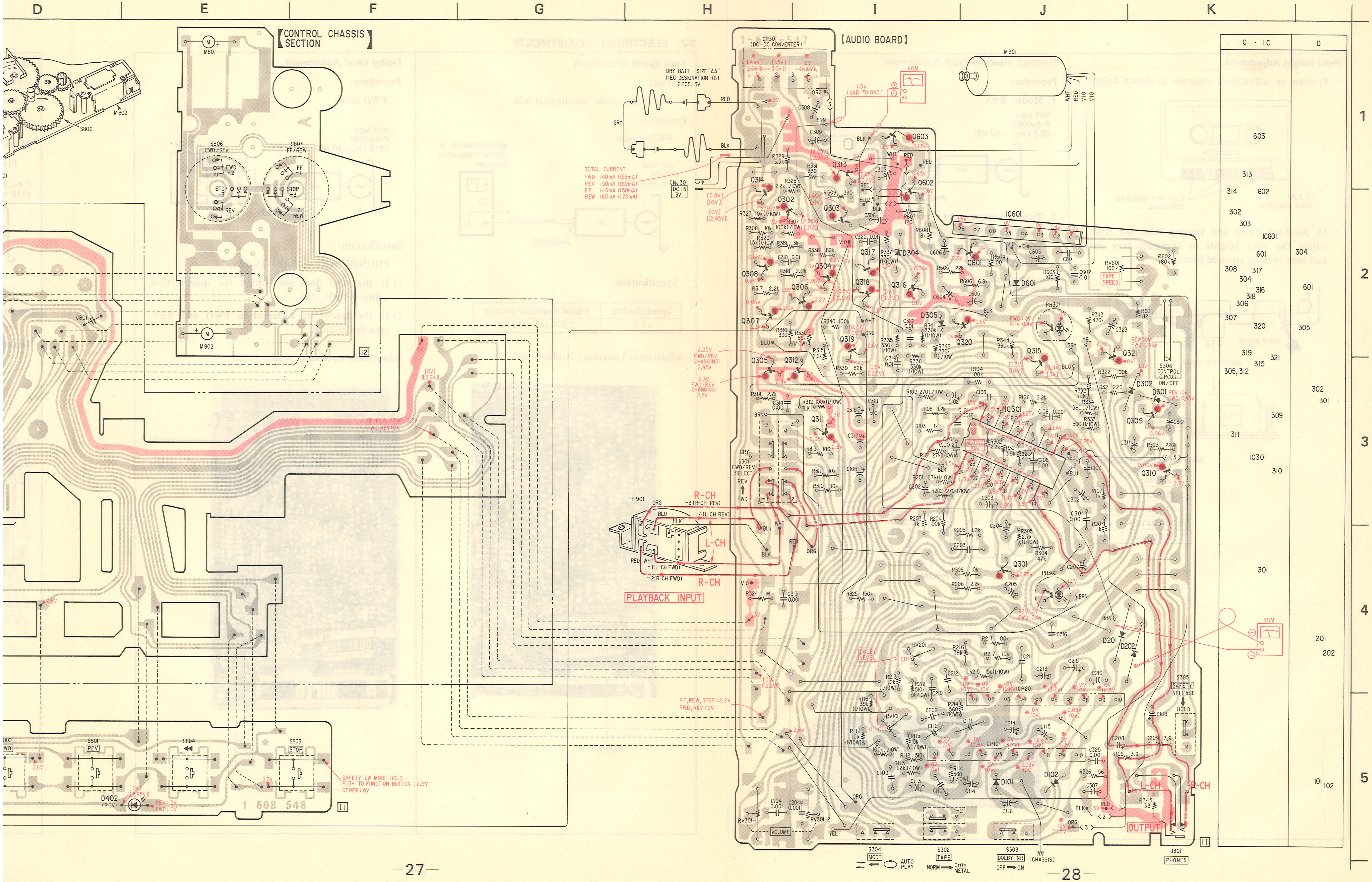
● Semiconductor Lead Layouts: See page 31.


A
B
C
D
E
F
G
H
IC 601 CX891
POWER
COMPARATOR
DC AMP
SHAPER
SAWTOOH WAVE OSC
IC 301 CX887
PRE AMP
EQ AMP
Ref AMP
POWER AMP
POWER AMP MUTING
LIPPLE FILTER
S807
S806
M802
M801
CONTROL CHASSIS SECTION
M801
S806 FWD/REV
S807 FF/REW
FWD
STOP
REV
FF
REW
M802
12
CP801 SYSTEM CONTROL CIRCUIT UNIT
(CONTROL CIRCUIT)
C801
2.6V
KEY SWITCH BOARD
S805
S802 FWD
S801 REV
S804
S803 STOP
D401 (FWD)
D402 (REV)
1 608 548
11
SAFETY SW MODE HOLD PUSH TO FUNCTION BUTTON : 2.6V OTHER : 0V
FF,REW,STOP : 2.2V FWD,REV : 0V
DRY BATT SIZE "AA" (IEC DESIGNATION R6) 2PCS, 3V
TOTAL CURRENT
FWD 140mA (155mA)
REV 150mA (160mA)
FF 140mA (150mA)
REW 160mA (170mA)
CNJ301 DC IN 3V
CP301 (DC-DC CONVERTER)
Q314
Q302
Q308
Q304
Q306
Q307
Q305
Q312
Q311
S301 FWD/REV SELECT
HP901
R-CH
L-CH
PLAYBACK INPUT
VOLUME
RV301-1
RV301-2

Note:

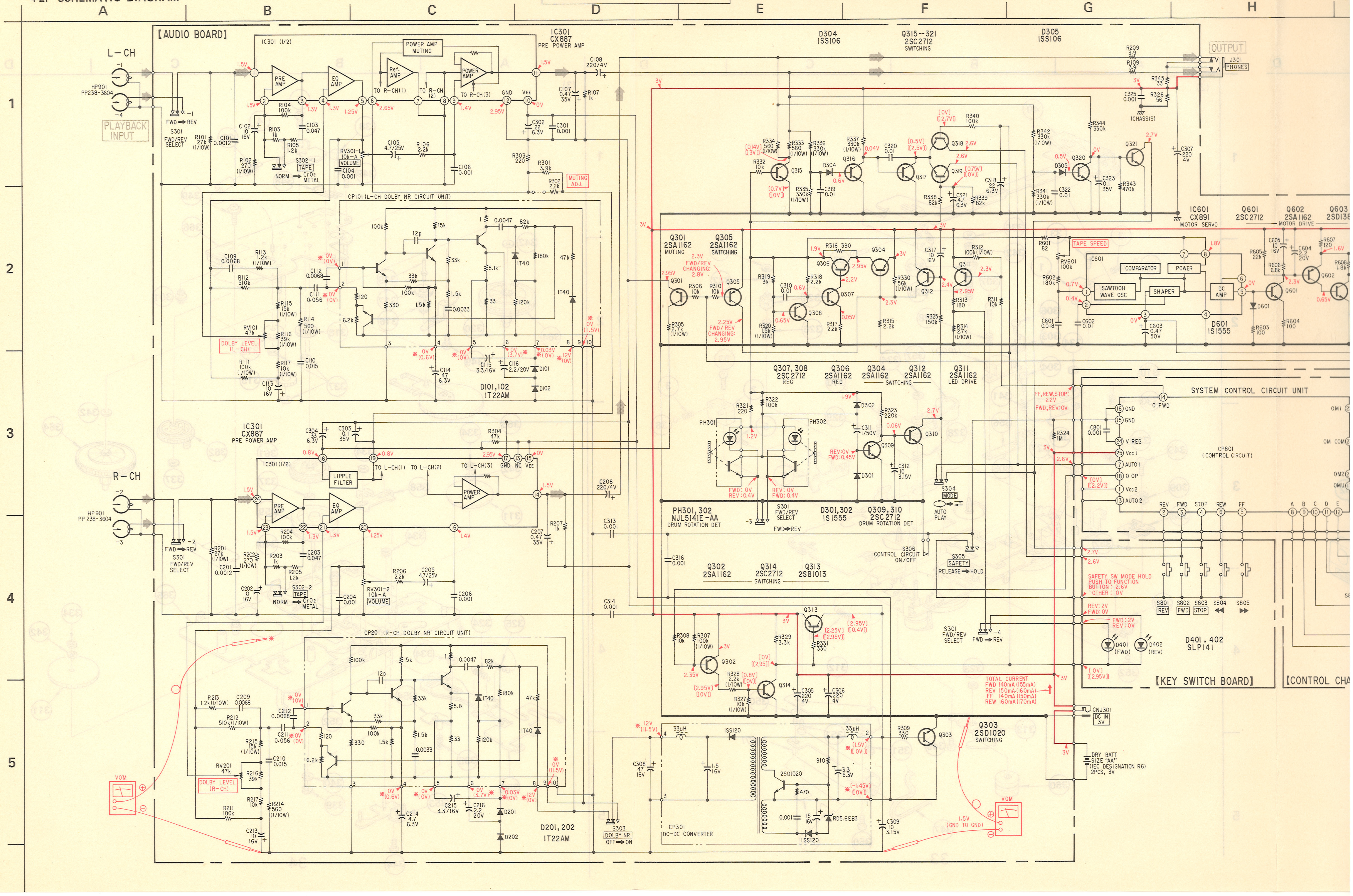
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  - no mark : FWD mode
  - ( ) : DOLBY ON
  - [ ] : FWD, REV, FF, REW mode
  - [[ ]] : STOP mode
  - ※ : Readings are taken with VOM Ⓐ shown by illustration.
- ○—: parts extracted from the component side.
- ●—: parts extracted from the conductor side.
- ▨ : B+ pattern

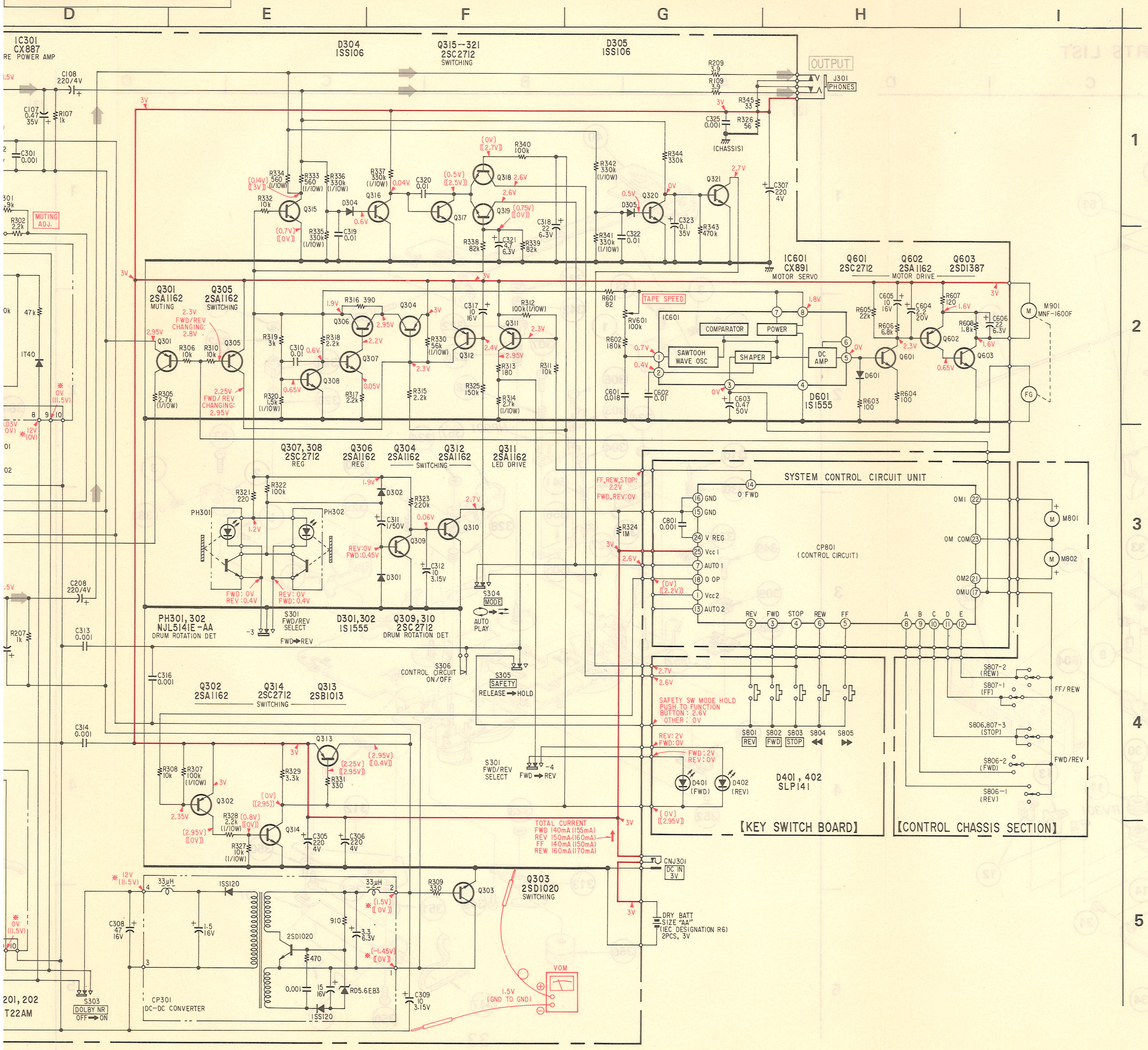
- ▬ ▬➔▬ : signal path
- ▬▬ ▬➔ : L-CH signal path
- ▬▪▬➔ : R-CH signal path


D
E
F
G
H
I
J
K
1
2
3
4
5
[CONTROL CHASSIS SECTION]
[AUDIO BOARD]
M801
M802
S806
S807
FWD/REV
FF/REW
STOP
S801 REV
S802 FWD
S803 STOP
S804
D402 (REV)
1 608 548
C801
CP301 (DC-DC CONVERTER)
DRY BATT SIZE "AA" (IEC DESIGNATION R6) 2PCS, 3V
TOTAL CURRENT
FWD 140mA (155mA)
REV 150mA (160mA)
FF 140mA (150mA)
REW 160mA (170mA)
CNJ301 DC IN 3V
1.5V (GND TO GND)
VOM
M901
IC601
IC301
PH301
PH302
RV601 100k TAPE SPEED
S306 CONTROL CIRCUIT ON/OFF
S301 FWD/REV SELECT
HP901
R-CH
L-CH
-3 (R-CH REV)
-4 (L-CH REV)
-1 (L-CH FWD)
-2 (R-CH FWD)
PLAYBACK INPUT
2.25V FWD/REV CHANGING: 2.95V
2.3V FWD/REV CHANGING: 2.8V
FF,REW,STOP: 2.2V FWD,REV: 0V
SAFETY SW MODE HOLD PUSH TO FUNCTION BUTTON: 2.6V OTHER: 0V
MUTING ADJ
DOLBY LEVEL
RV201
RV101
CP201
CP101
D201
D202
D101
D102
S305 SAFETY RELEASE HOLD
J301 PHONES
OUTPUT
RV301-1
RV301-2
VOLUME
S304 MODE AUTO PLAY
S302 TAPE NORM CrO2 METAL
S303 DOLBY NR OFF ON
(CHASSIS)

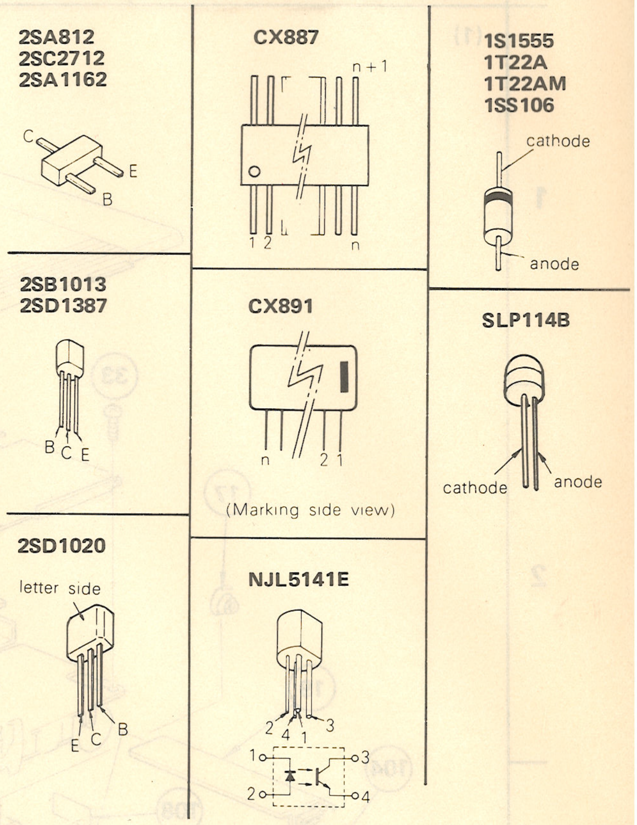
	Q · IC	D
1	603 313 314 602	
2	302 303 IC601 601 308 317 304 316 318 306 307 320 319 305, 312 315 321	304 601 305
3	309 311 IC301 310	302 301
4	301	201 202
5		101 102

4-2. SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
[AUDIO BOARD]
L-CH
R-CH
HP901
PP238-3604
PLAYBACK INPUT
S301
FWD/REV SELECT
FWD → REV
IC301 (1/2)
IC301
CX887
PRE POWER AMP
PRE AMP
EQ AMP
Ref. AMP
POWER AMP MUTING
POWER AMP
LIPPLE FILTER
TO R-CH(1)
TO R-CH(2)
TO R-CH(3)
TO L-CH(1)
TO L-CH(2)
TO L-CH(3)
GND
VEE
NC
C108
220/4V
C208
220/4V
R107
1k
R207
1k
RV301-1
10k-A
VOLUME
RV301-2
10k-A
S302-1
S302-2
TAPE
NORM
CrO2
METAL
MUTING ADJ.
CP101 (L-CH DOLBY NR CIRCUIT UNIT)
CP201 (R-CH DOLBY NR CIRCUIT UNIT)
DOLBY LEVEL (L-CH)
DOLBY LEVEL (R-CH)
RV101
47k
RV201
47k
D101, 102
1T22AM
D201, 202
1T22AM
S303
DOLBY NR
OFF → ON
VOM
D304
1SS106
D305
1SS106
Q315-321
2SC2712
SWITCHING
R209
3.9
R109
3.9
OUTPUT
J301
PHONES
(CHASSIS)
C307
220
4V
Q301
2SA1162
MUTING
Q305
2SA1162
SWITCHING
FWD/REV CHANGING: 2.8V
FWD/REV CHANGING: 2.95V
Q307, 308
2SC2712
REG
Q306
2SA1162
REG
Q304
2SA1162
Q312
2SA1162
SWITCHING
Q311
2SA1162
LED DRIVE
PH301
PH302
PH301, 302
NJL5141E-AA
DRUM ROTATION DET
D301, 302
1S1555
Q309, 310
2SC2712
DRUM ROTATION DET
FWD: 0V
REV: 0.4V
REV: 0V
FWD: 0.4V
REV: 0V
FWD: 0.45V
S304
MODE
AUTO PLAY
S306
CONTROL CIRCUIT ON/OFF
S305
SAFETY
RELEASE → HOLD
Q302
2SA1162
Q314
2SC2712
Q313
2SB1013
SWITCHING
Q303
2SD1020
SWITCHING
CP301
DC-DC CONVERTER
1SS120
2SD1020
RD5.6EB3
33μH
1.5V (GND TO GND)
IC601
CX891
MOTOR SERVO
Q601
2SC2712
Q602
2SA1162
MOTOR DRIVE
Q603
2SD138
TAPE SPEED
RV601
100k
COMPARATOR
POWER
SAWTOOH WAVE OSC
SHAPER
DC AMP
D601
1S1555
SYSTEM CONTROL CIRCUIT UNIT
CP801
(CONTROL CIRCUIT)
GND
0 FWD
V REG
Vcc 1
AUTO 1
0 OP
Vcc 2
AUTO 2
FF, REW, STOP: 2.2V
FWD, REV: 0V
REV
FWD
STOP
FF
S801
S802
S803
S804
S805
SAFETY SW MODE HOLD
PUSH TO FUNCTION BUTTON: 2.6V
OTHER: 0V
REV: 2V
FWD: 0V
FWD: 2V
REV: 0V
D401 (FWD)
D402 (REV)
D401, 402
SLP141
[KEY SWITCH BOARD]
[CONTROL CHA
TOTAL CURRENT
FWD 140mA (155mA)
REV 150mA (160mA)
FF 140mA (150mA)
REW 160mA (170mA)
CNJ301
DC IN
3V
DRY BATT
SIZE "AA"
(IEC DESIGNATION R6)
2PCS, 3V
OMI
OM COM
OM2
OMU


D
E
F
G
H
I
1
2
3
4
5
IC301 CX887 POWER AMP
D304 1SS106
Q315~321 2SC2712 SWITCHING
D305 1SS106
OUTPUT
J301 PHONES
(CHASSIS)
MUTING ADJ.
IC601 CX891 MOTOR SERVO
Q601 2SC2712
Q602 2SA1162 MOTOR DRIVE
Q603 2SD1387
Q301 2SA1162 MUTING
Q305 2SA1162 SWITCHING
TAPE SPEED
COMPARATOR
POWER
SAWTOOH WAVE OSC
SHAPER
DC AMP
D601 1S1555
M901 MNF-1600F
FG
Q307, 308 2SC2712 REG
Q306 2SA1162 REG
Q304 2SA1162
Q312 2SA1162 SWITCHING
Q311 2SA1162 LED DRIVE
SYSTEM CONTROL CIRCUIT UNIT
CP801 (CONTROL CIRCUIT)
M801
M802
PH301
PH302
PH301, 302 NJL5141E-AA DRUM ROTATION DET
S301 FWD/REV SELECT FWD→REV
D301, 302 1S1555
Q309, 310 2SC2712 DRUM ROTATION DET
S304 MODE AUTO PLAY
S306 CONTROL CIRCUIT ON/OFF
S305 SAFETY RELEASE→HOLD
Q302 2SA1162
Q314 2SC2712 SWITCHING
Q313 2SB1013
SAFETY SW MODE HOLD PUSH TO FUNCTION BUTTON : 2.6V OTHER : 0V
S801 REV
S802 FWD
S803 STOP
S804
S805
S807-2 (REW)
S807-1 (FF)
FF/REW
S806,807-3 (STOP)
S806-2 (FWD)
FWD/REV
S806-1 (REV)
D401 (FWD)
D402 (REV)
D401, 402 SLP141
[KEY SWITCH BOARD]
[CONTROL CHASSIS SECTION]
TOTAL CURRENT FWD 140mA (155mA) REV 150mA (160mA) FF 140mA (150mA) REW 160mA (170mA)
CNJ301 DC IN 3V
Q303 2SD1020 SWITCHING
DRY BATT SIZE "AA" (IEC DESIGNATION R6) 2PCS, 3V
VOM
1.5V (GND TO GND)
CP301 DC-DC CONVERTER
S303 DOLBY NR OFF→ON
201, 202 1T22AM

Semiconductor Lead Layouts


2SA812
2SC2712
2SA1162
C
E
B
CX887
n+1
1 2
n
1S1555
1T22A
1T22AM
1SS106
cathode
anode
2SB1013
2SD1387
B C E
CX891
n
2 1
(Marking side view)
SLP114B
cathode
anode
2SD1020
letter side
E C B
NJL5141E
2 4 1 3
1
3
2
4

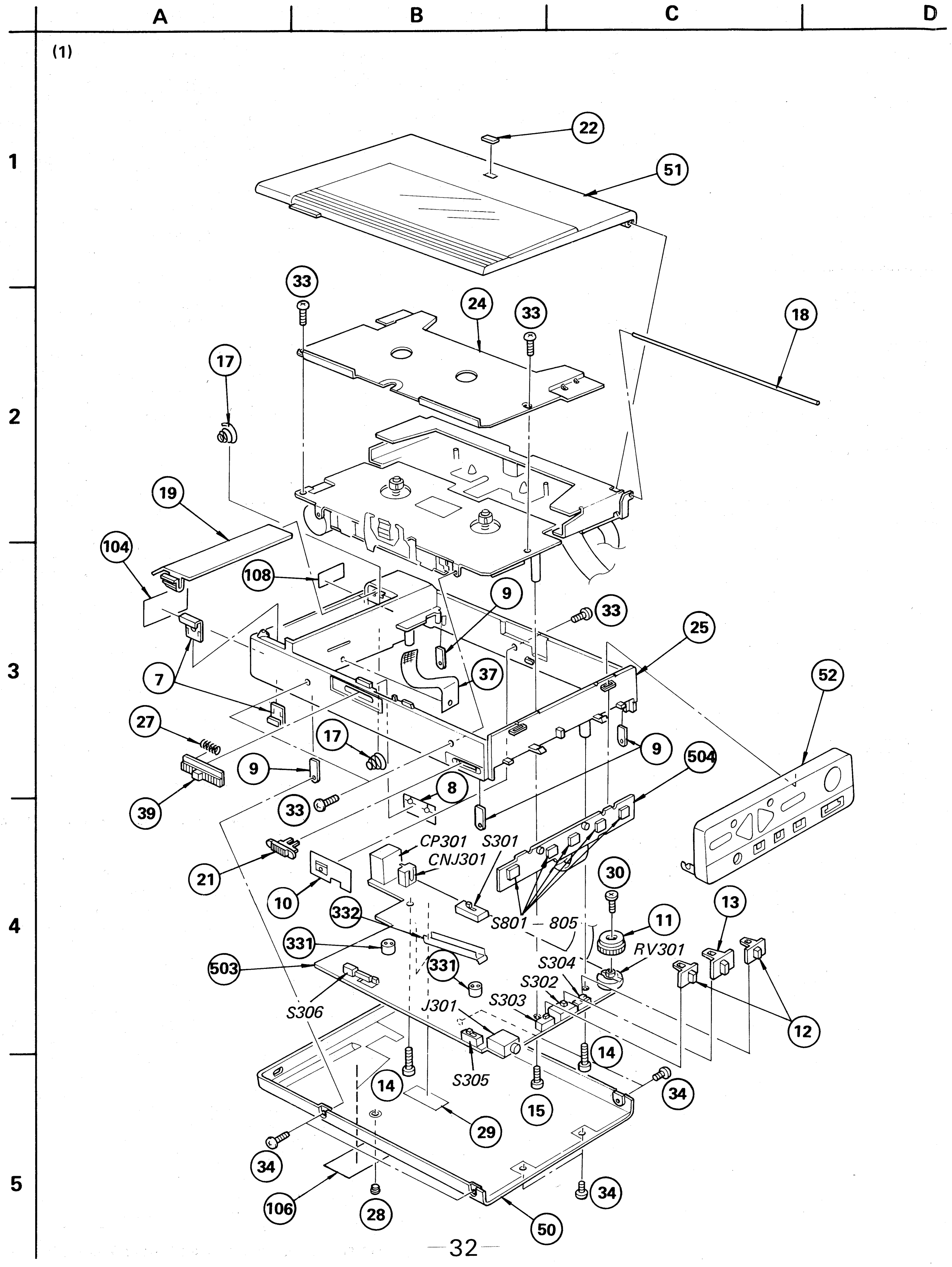
Note:

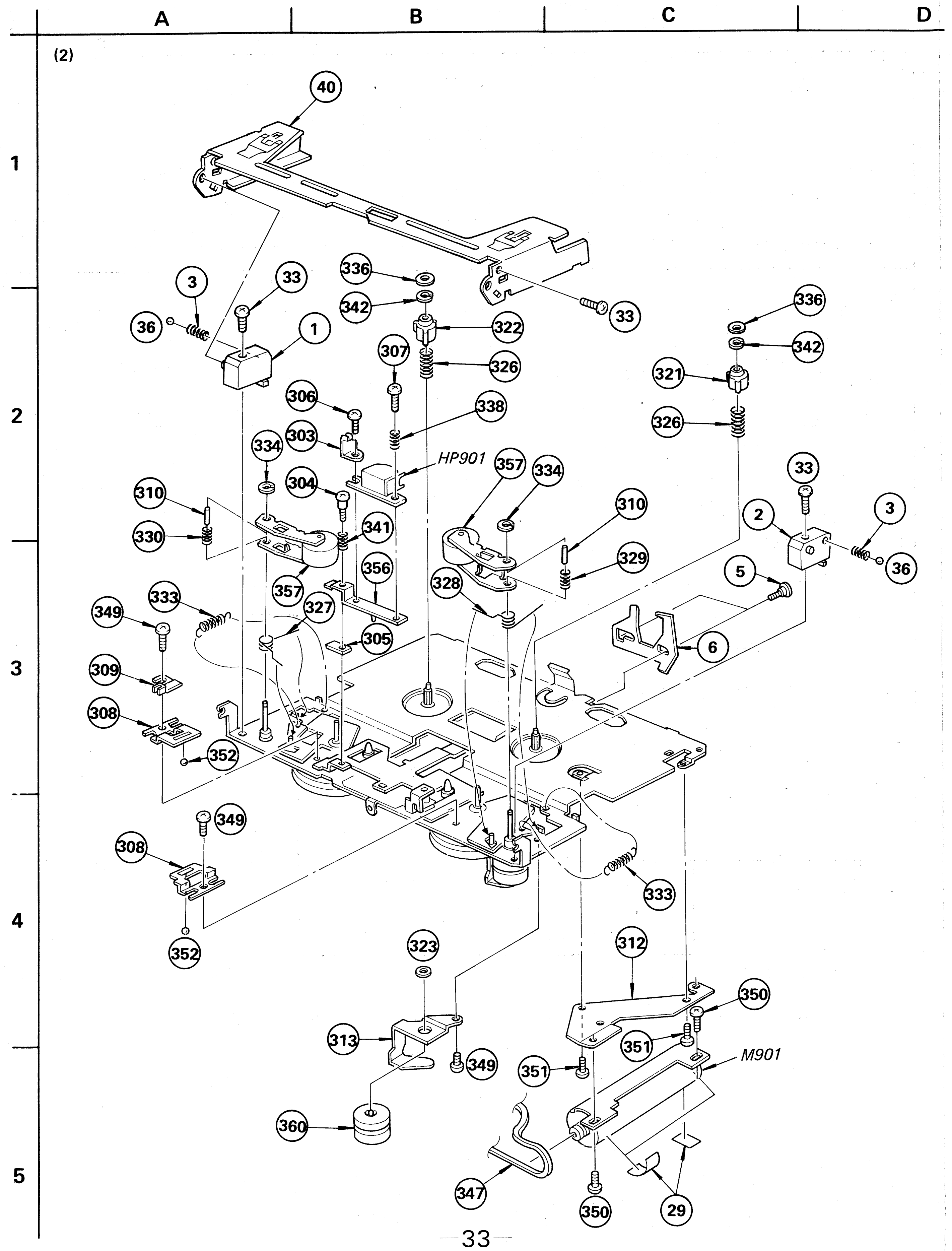
- ➡ : signal path
- All capacitors are in μF unless otherwise noted. pF : $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ▭ : adjustment for repair.
- ——— : B+ bus.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  no mark : FWD mode
  ( ) : DOLBY ON
  [ ] : FWD, REV, FF, REW mode
  [[ ]] : STOP mode
  ※ : Readings are taken with VOM Ⓐ shown by illustration.
- Switches

Ref. No.	Switch	Position
S301	FWD/REV SELECTOR	FWD
S302	TAPE	NORM
S303	DOLBY NR	OFF
S304	MODE	AUTO PLAY
S305	SAFETY	RELEASE
S306	CONTROL CIRCUIT	OFF
S801	REV	OFF
S802	FWD	OFF
S803	STOP	OFF
S804	◀◀ (REW)	OFF
S805	▶▶ (FF)	OFF

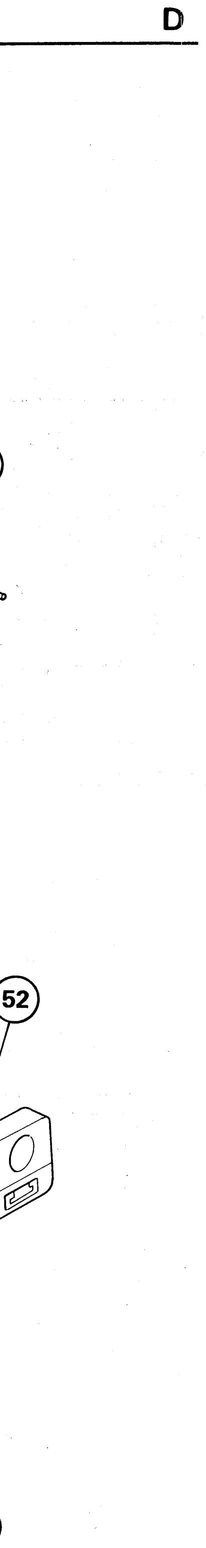
Note: Voltages are measured with a VOM (50kΩ/V).

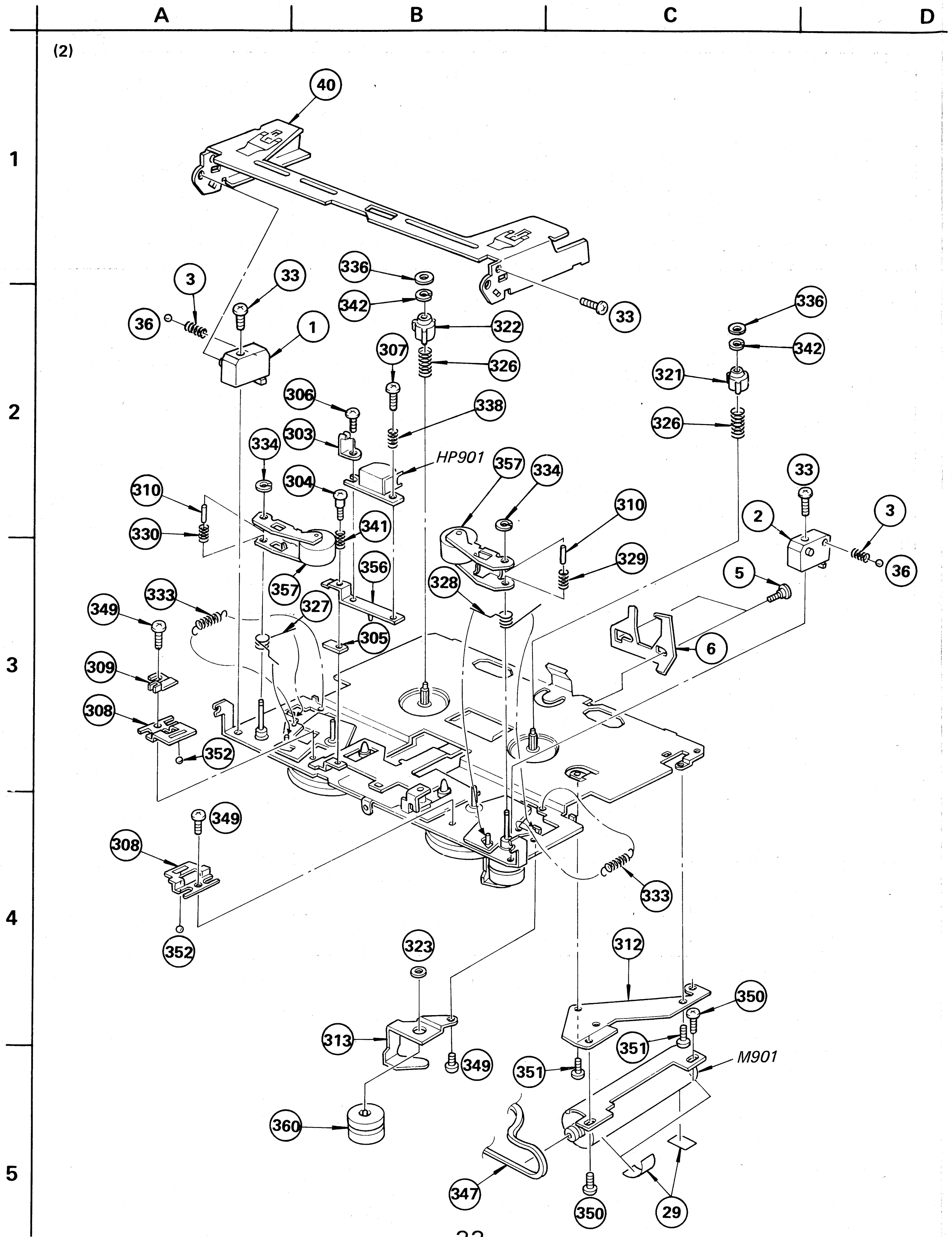
SECTION 5
EXPLODED VIEWS AND PARTS LIST

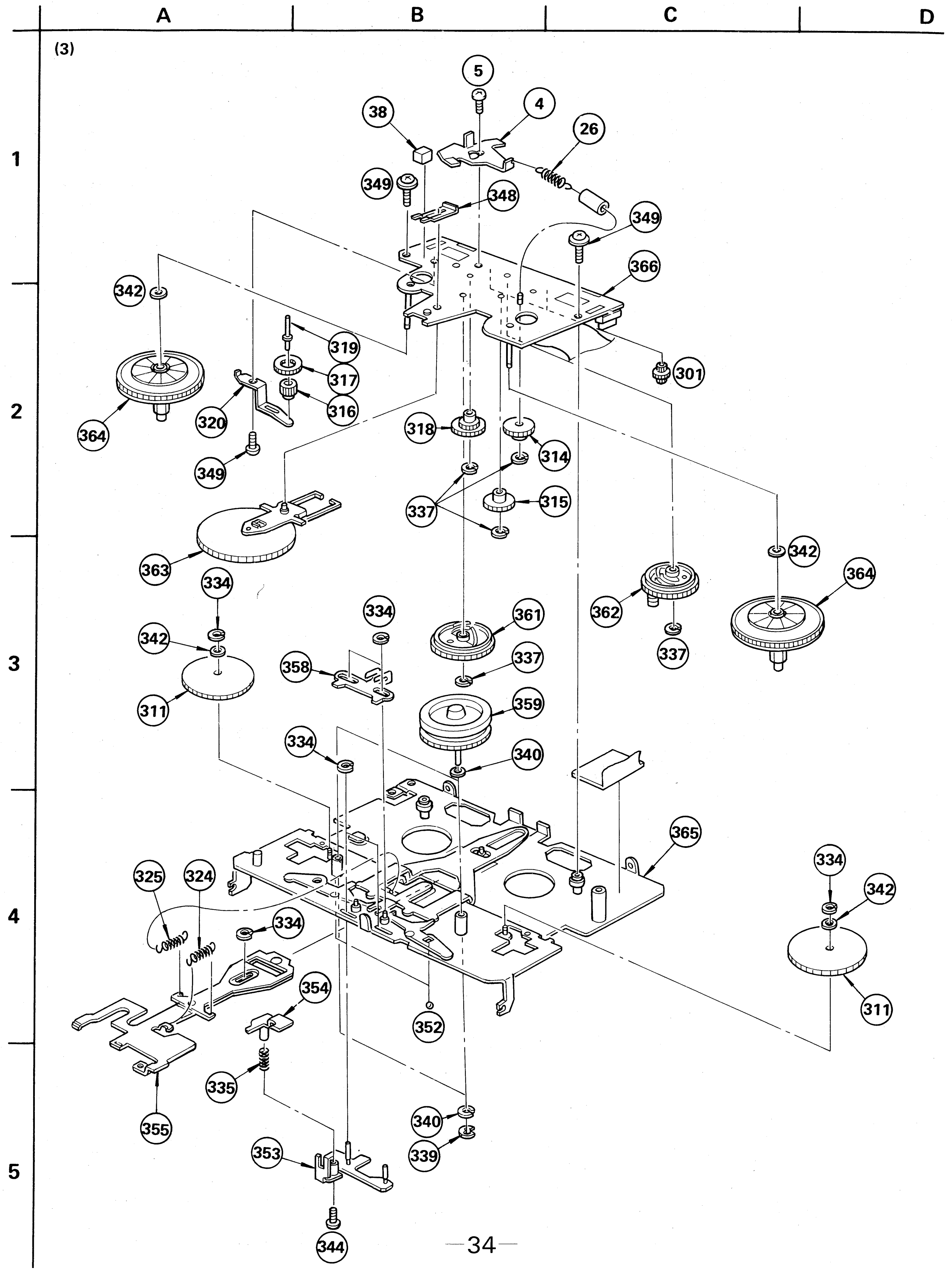

A
B
C
D
1
2
3
4
5
(1)
22
51
33
24
33
18
17
19
104
108
9
33
25
7
37
52
27
17
9
9
504
39
33
8
21
CP301
S301
CNJ301
10
332
S801 – 805
30
11
13
331
RV301
503
331
S304
S302
S303
J301
S306
12
14
14
34
S305
15
29
34
106
28
50
34


A
B
C
D
1
2
3
4
5
(2)
40
3
33
336
342
36
1
322
33
307
326
336
342
321
306
338
326
303
334
HP901
357
334
33
310
304
2
3
330
341
310
356
36
329
333
328
5
349
357
327
305
6
309
308
352
349
308
333
352
323
312
350
313
349
351
351
M901
360
347
350
29

(3)


D
52


A
B
C
D
(2)
HP901
M901


A
B
C
D
(3)

GENERAL SECTION

No.	Part No.	Description
1	3-310-091-00	RETAINER (R), FULCRUM
2	3-310-092-00	RETAINER (N), FULCRUM
3	3-310-093-00	SPRING, COMPRESSION
4	♠;3-310-094-00	PLATE, RELEASE, E.E
5	3-310-095-00	SCREW, EE
6	♠;3-310-096-00	PLATE, LOCK, EE
7	3-310-097-00	TERMINAL, BATTERY
8	3-310-098-00	SHEET, KNOB
9	3-310-099-00	BRACKET, PANEL
10	3-310-100-00	PLATE, SHIELD, HEAD
11	3-310-101-01	(SILVER)...............KNOB, CONTROL
11	3-310-101-11	(EXCLUDING US:BLACK)...KNOB, CONTROL
12	3-310-104-01	(SILVER)...............KNOB, CONTROL
12	3-310-104-11	(EXCLUDING US:BLACK)...KNOB, CONTROL
13	3-310-105-01	(SILVER)..............KNOB, TAPE SELECTION
13	3-310-105-11	(EXCLUDING US:BLACK)..KNOB, TAPE SELECTION
14	3-310-106-01	SCREW, PC BOARD
15	3-310-107-00	SCREW, GROUND
17	3-310-113-00	SPRING
18	3-310-116-00	SHAFT, CASSETTE
19	3-310-117-01	(SILVER)...............LID, BATTERY CASE
19	3-310-117-11	(EXCLUDING US:BLACK)...LID, BATTERY CASE
21	3-310-118-00	KNOB, LOCK
22	3-310-119-01	(SILVER).....ORNAMENT, AZIMUTH ADJUSTMENT
22	3-310-119-11	(EXCLUDING US:BLACK)...ORNAMENT, AZIMUTH ADJUSTMENT
24	3-310-125-00	PANEL, REEL
25	3-310-133-01	(SILVER)...............CHASSIS
25	3-310-133-11	(EXCLUDING US:BLACK)...CHASSIS
26	3-536-767-XX	SPRING, TENSION
27	3-578-104-00	SPRING, COMPRESSION
28	3-578-232-00	(SILVER).....ORNAMENT, ADJUSTMENT HOLE
28	3-578-232-21	(EXCLUDING US:BLACK)...ORNAMENT, ADJUSTMENT HOLE
29	3-831-441-XX	CUSHION
30	3-880-990-00	SCREW (1.7X3), FLAT, (+) SPECIAL
31	7-627-551-28	SCREW, PRECISION +P 1.4X2.5
32	7-627-850-07	SCREW, PRECISION +P 1.4X2
33	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
34	7-627-551-87	(SILVER).....SCREW, PRECISION +P 1.4X1.8
34	7-627-555-88	(EXCLUDING US:BLACK)...PRECISION SCREW +P 1.4X1.8
36	7-671-112-01	STEEL, BALL
37	9-911-816-01	RIBBON, BATTERY
38	9-911-841-XX	CUSHION, RUBBER

GENERAL SECTION

No.	Part No.	Description
39	X-3310-022-0	(SILVER)...............KNOB ASSY, OPEN
39	X-3310-025-0	(EXCLUDING US:BLACK)...KNOB ASSY, OPEN
40	♠;X-3310-023-0	HOLDER ASSY, CASSETTE
50	X-3310-030-1	(SILVER)...............CABINET ASSY, REAR
50	X-3310-031-1	(EXCLUDING US:BLACK)...CABINET ASSY, REAR
51	X-3310-032-1	(EXCLUDING US:SILVER)...CASSETE LID ASSY
51	X-3310-033-1	(EXCLUDING US:BLACK)....CASSETE LID ASSY
51	X-3310-035-1	(US:SILVER).............CASSETE LID ASSY
52	X-3310-028-1	(SILVER)..............DIRECTION BUTTON ASSY
52	X-3310-029-1	(EXCLUDING US:BLACK)..DIRECTION BUTTON ASSY

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
100	3-310-002-00	CUSHION (UPPER)
101	3-310-003-00	INDIVIDUAL CARTON
102	3-310-005-00	CUSHION (LOWER)
103	3-310-134-00	CASE, CARRYING
104	3-701-308-00	LABEL, PRODUCT COLOR
105	3-701-309-00	LABEL, PRODUCT COLOR
106	3-310-135-01	(SILVER)...............LABEL, MODEL NUMBER
106	3-310-135-11	(EXCLUDING US:BLACK)...LABEL, MODEL NUMBER
107	3-701-625-00	BAG, POLYETHYLENE
108	3-701-999-00	LABEL, SERIAL NUMBER
109	3-795-110-11	CARD, WARRANTY, INTERNATIONAL
110	3-773-183-11	MANUAL, INSTRUCTION
111	X-3310-027-0	BELT, CARRYING
112	8-951-183-91	HEADPHONE (MDR-W5)
113	8-893-530-00	TAPE DEMONSTRATION (CD-818)
114	1-528-052-31	BATTERY
115	3-310-148-00	FRAME, INNER

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

MECHANISM SECTION

No.	Part No.	Description
301	3-308-502-00	WHEEL, WORM
303	3-310-029-00	CLAMP (A), LEAD
304	3-310-030-00	SCREW
305	3-310-031-01	SEAM (T=0.2)
305	3-310-031-11	SEAM (T=0.4)
305	3-310-031-21	SEAM (T=0.8)
305	3-310-031-31	SEAM (T=1.0)
306	3-310-034-00	SCREW (M2X1.6), PRECISION
307	3-310-035-00	SCREW, ADJUSTMENT, AZIMUTH
308	3-310-036-00	SPRING
309	3-310-037-00	CLAMP (B), LEAD
310	3-310-038-00	COLLAR, PINCH
311	3-310-043-00	GEAR, FWD
312	♠;3-310-044-00	BRACKET, MOTOR
313	♠;3-310-049-00	RETAINER, THRUST
314	3-310-055-00	GEAR (A), MIDWAY
315	3-310-056-00	GEAR (B), MIDWAY
316	3-310-057-00	GEAR (C), MIDWAY
317	3-310-058-00	GEAR (D), MIDWAY
318	3-310-059-00	GEAR (E), MIDWAY
319	3-310-060-00	SHAFT, GEAR (C), MIDWAY
320	3-310-064-00	SPRING
321	3-310-076-00	CLAW (N), REEL
322	3-310-077-00	CLAW (R), REEL
323	3-310-082-01	SPACER (T=0.13)
323	3-310-082-11	SPACER (T=0.25)
324	3-310-083-00	SPRING, TENSION
325	3-310-084-00	SPRING, TENSION
326	3-310-085-00	SPRING, COMPRESSION
327	3-310-086-00	SPRING (R)
328	3-310-087-00	SPRING (N)
329	3-310-088-00	SPRING (N)
330	3-310-089-00	SPRING (R)
331	3-310-102-00	BASE, PHOTO REFLECTOR
332	♠;3-310-103-00	PLATE, SHIELD, BELT
333	3-559-402-00	SPRING, TENSION
334	3-570-615-00	POLY-WASHER (DIA.1.2)
335	3-578-121-00	SPRING, COMPRESSION
336	3-578-242-00	WASHER
337	3-578-265-11	WASHER, STOPPER
338	3-310-136-00	SPRING, COMPRESSION
339	3-590-768-00	RING (A), E
340	3-590-770-00	POLY-SLIDER (A)
341	3-669-452-00	SPRING, COMPRESSION

MECHANISM SECTION

No.	Part No.	Description
342	3-701-436-01	WASHER, 1.6
343	3-703-502-21	SCREW
344	3-703-502-71	SCREW
345	3-831-441-XX	SPACER
346	3-884-241-00	SHEET (C), ADHESIVE
347	3-310-050-00	BELT
348	♠;3-310-137-00	SPRING
349	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
350	7-627-850-37	SCREW, PRECISION +P 1.4X1.4
351	7-627-850-47	SCREW, PRECISION +P 1.4X1.6
352	7-671-153-01	STENLESS BOWL
353	♠;X-3310-005-0	PLATE ASSY, ADJUSTMENT, AZIMUTH
354	♠;X-3310-006-0	PLATE (F) ASSY, ADJUSTMENT
355	♠;X-3310-007-0	CHASSIS ASSY, HEAD
356	X-3310-008-0	BRACKET ASSY, HEAD
357	X-3310-009-0	PINCH LEVER ASSY
358	♠;X-3310-010-0	SLIDER ASSY, SWITCH
359	X-3310-011-0	FLYWHEEL ASSY
360	X-3310-012-0	PULLEY ASSY, MIDWAY
361	X-3310-013-0	GEAR ASSY, DRIVING, FR
362	X-3310-014-0	GEAR ASSY, DRIVING, PLAY
363	X-3310-015-0	LEVER ASSY, FR
364	X-3310-016-0	TABLE ASSY, REEL
365	♠;X-3310-018-0	CHASSIS ASSY, MECHANICAL
366	♠;X-3310-019-0	CHASSIS ASSY, CONTROL

NOTE:

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- Items marked " ♠ " are not stocked since thev are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	1-216-296-00	CARBON 0 5% 1/8W
502	1-464-231-00	CIRCUIT UNIT, SYSTEM CONTROL (2)
503	♠;A-3015-164-A	PC BOARD ASSY, AUDIO
C101	1-163-010-91	CHIP COMPONENT 0.0012MF 10% 50V
C104	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C106	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C108	1-123-827-00	ELECT 220MF 20% 4V
C201	1-163-010-91	CHIP COMPONENT 0.0012MF 10% 50V
C204	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C206	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C208	1-123-827-00	ELECT 220MF 20% 4V
C301	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C305	1-123-827-00	ELECT 220MF 20% 4V
C306	1-123-827-00	ELECT 220MF 20% 4V
C307	1-123-827-00	ELECT 220MF 20% 4V
C308	1-123-821-41	ELECT 47MF 20% 16V
C310	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C313	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C314	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C315	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C316	1-163-047-91	CHIP COMPONENT 0.001MF 10% 50V
C319	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C320	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C322	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
C325	1-163-009-91	CHIP COMPONENT 0.001MF 10% 50V
C602	1-163-021-00	CHIP COMPONENT 0.01MF 10% 50V
CNJ301	1-507-723-00	JACK, EXTENTION POWER
CP101	1-464-205-00	CIRCUIT UNIT, AGC
CP201	1-464-205-00	CIRCUIT UNIT, AGC
CP301	1-464-207-00	CONVERTER UNIT, DC-DC
D101	8-719-422-21	DIODE 1T22AM
D102	8-719-422-21	DIODE 1T22AM
D201	8-719-422-21	DIODE 1T22AM
D202	8-719-422-21	DIODE 1T22AM
D301	8-719-815-55	DIODE 1S1555
D302	8-719-815-55	DIODE 1S1555
D303	8-719-815-55	DIODE 1S1555
D304	8-719-901-06	DIODE 1SS106
D305	8-719-901-06	DIODE 1SS106
D401	8-719-991-14	DIODE SLP114B
D402	8-719-991-14	DIODE SLP114B
D601	8-719-815-55	DIODE 1S1555
HP901	8-825-537-10	HEAD, PLAYBACK (PP238-3604)
IC301	8-759-600-09	IC CX-887
IC601	8-759-608-91	IC CX-891

ELECTRICAL PARTS

Ref.No.	Part No.	Description
J301	1-507-787-00	JACK
M801	8-835-067-01	MOTOR, DC (DNR-5300A)
M802	8-835-067-01	MOTOR, DC (DNR-5300A)
M901	8-835-008-11	MOTOR, DC (MNF-1600F)
PH301	8-719-751-42	DIODE NJL5141E-AA
PH302	8-719-751-42	DIODE NJL5141E-AA
Q301	8-729-216-22	TRANSISTOR 2SA1162
Q302	8-729-216-22	TRANSISTOR 2SA1162
Q303	8-729-102-03	TRANSISTOR 2SD1020
Q304	8-729-216-22	TRANSISTOR 2SA1162
Q305	8-729-216-22	TRANSISTOR 2SA1162
Q306	8-729-216-22	TRANSISTOR 2SA1162
Q307	8-729-271-12	TRANSISTOR 2SC2712
Q308	8-729-271-12	TRANSISTOR 2SC2712
Q309	8-729-271-12	TRANSISTOR 2SC2712
Q310	8-729-271-12	TRANSISTOR 2SC2712
Q311	8-729-216-22	TRANSISTOR 2SA1162
Q312	8-729-216-22	TRANSISTOR 2SA1162
Q313	8-729-801-83	TRANSISTOR 2SB1013
Q314	8-729-271-12	TRANSISTOR 2SC2712
Q315	8-729-271-12	TRANSISTOR 2SC2712
Q316	8-729-271-12	TRANSISTOR 2SC2712
Q317	8-729-271-12	TRANSISTOR 2SC2712
Q318	8-729-271-12	TRANSISTOR 2SC2712
Q319	8-729-271-12	TRANSISTOR 2SC2712
Q320	8-729-271-12	TRANSISTOR 2SC2712
Q321	8-729-271-12	TRANSISTOR 2SC2712
Q601	8-729-271-12	TRANSISTOR 2SC2712
Q602	8-729-216-22	TRANSISTOR 2SA1162
Q603	8-729-801-92	TRANSISTOR 2SD1387
R101	1-216-083-00	CARBON CHIP 27K 5% 1/10W
R102	1-216-035-00	CARBON CHIP 270 5% 1/10W
R104	1-216-246-91	CARBON CHIP 100K 5% 1/8W
R106	1-216-206-91	CARBON CHIP 2.2K 5% 1/8W
R109	1-216-140-00	CARBON CHIP 3.9 5% 1/8W
R111	1-216-097-00	CARBON CHIP 100K 5% 1/10W
R112	1-216-114-91	CARBON CHIP 510K 5% 1/10W
R113	1-216-051-00	CARBON CHIP 1.2K 5% 1/10W
R114	1-216-043-00	CARBON CHIP 560 5% 1/10W
R115	1-216-077-00	CARBON CHIP 15K 5% 1/10W
R116	1-216-087-00	CARBON CHIP 39K 5% 1/10W
R117	1-216-073-00	CARBON CHIP 10K 5% 1/10W
R201	1-216-083-00	CARBON CHIP 27K 5% 1/10W
R202	1-216-035-00	CARBON CHIP 270 5% 1/10W
R204	1-216-246-91	CARBON CHIP 100K 5% 1/8W

NOTE:

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- Items marked " ♠ " are not stocked since thev are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R206	1-216-206-91	CARBON CHIP	2.2K	5%	1/8W
R209	1-216-140-00	CARBON CHIP	3.9	5%	1/8W
R211	1-216-246-91	CARBON CHIP	100K	5%	1/8W
R212	1-216-114-91	CARBON CHIP	510K	5%	1/10W
R213	1-216-051-00	CARBON CHIP	1.2K	5%	1/10W
R214	1-216-043-00	CARBON CHIP	560	5%	1/10W
R215	1-216-077-00	CARBON CHIP	15K	5%	1/10W
R301	1-216-212-91	CARBON CHIP	3.9K	5%	1/8W
R302	1-216-206-91	CARBON CHIP	2.2K	5%	1/8W
R303	1-216-182-00	CARBON CHIP	220	5%	1/8W
R304	1-216-238-91	CARBON CHIP	47K	5%	1/8W
R305	1-216-059-00	CARBON CHIP	2.7K	5%	1/10W
R307	1-216-097-00	CARBON CHIP	100K	5%	1/10W
R309	1-216-186-00	CARBON CHIP	330	5%	1/8W
R312	1-216-097-00	CARBON CHIP	100K	5%	1/10W
R314	1-216-059-00	CARBON CHIP	2.7K	5%	1/10W
R315	1-216-206-91	CARBON CHIP	2.2K	5%	1/8W
R316	1-216-188-91	CARBON CHIP	390	5%	1/8W
R317	1-216-206-91	CARBON CHIP	2.2K	5%	1/8W
R318	1-216-206-91	CARBON CHIP	2.2K	5%	1/8W
R320	1-216-053-00	CARBON CHIP	1.5K	5%	1/10W
R321	1-216-178-00	CARBON CHIP	150	5%	1/8W
R322	1-216-246-91	CARBON CHIP	100K	5%	1/8W
R326	1-216-168-91	CARBON CHIP	56	5%	1/8W
R327	1-216-073-00	CARBON CHIP	10K	5%	1/10W
R330	1-216-091-00	CARBON CHIP	56K	5%	1/10W
R331	1-216-186-00	CARBON CHIP	330	5%	1/8W
R333	1-216-043-00	CARBON CHIP	560	5%	1/10W
R334	1-216-043-00	CARBON CHIP	560	5%	1/10W
R335	1-216-109-00	CARBON CHIP	330K	5%	1/10W
R336	1-216-109-00	CARBON CHIP	330K	5%	1/10W
R337	1-216-109-00	CARBON CHIP	330K	5%	1/10W
R338	1-216-244-91	CARBON CHIP	82K	5%	1/8W
R339	1-216-244-91	CARBON CHIP	82K	5%	1/8W
R340	1-216-246-91	CARBON CHIP	100K	5%	1/8W
R341	1-216-109-00	CARBON CHIP	330K	5%	1/10W
R342	1-216-109-00	CARBON CHIP	330K	5%	1/10W
R345	1-216-162-91	CARBON CHIP	33	5%	1/8W
R601	1-216-172-00	CARBON CHIP	82	5%	1/8W
RV101	1-226-753-00	RES, ADJ, SOLID 47K			
RV201	1-226-753-00	RES, ADJ, SOLID 47K			
RV301	1-228-169-00	RES, VAR, CARBON 10K/10K			
RV601	1-226-784-00	RES, ADJ, METAL GLAZE 100K			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S301	1-554-029-00	SWITCH, SLIDE
S302	1-554-078-00	SWITCH, SLIDE
S303	1-553-197-00	SWITCH, SLIDE
S304	1-553-197-00	SWITCH, SLIDE
S305	1-553-197-00	SWITCH, SLIDE
S306	1-553-817-00	SWITCH, LEAF
S801	1-554-232-00	SWITCH, KEY BOARD
S802	1-554-232-00	SWITCH, KEY BOARD
S803	1-554-232-00	SWITCH, KEY BOARD
S804	1-554-232-00	SWITCH, KEY BOARD
S805	1-554-232-00	SWITCH, KEY BOARD

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) *may be different from those used in the* set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the *following lists for their part numbers.* MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : *nonflammable*

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTROLYTIC CAPACITORS

			RATING		→ : Use the high voltage rated one.	
CAP. (μF)	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

				RATING			
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

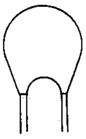
CERAMIC (SEMICONDUCTOR) CAPACITORS

			RATING	→ : Use the high voltage rated one.	
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

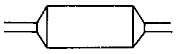
RATING											
CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



RATING → : Use the high voltage rated one.							
CAP. (μF)	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



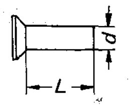
RATING						
CAP. (μF)	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/8 WATT CARBON RESISTOR

Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

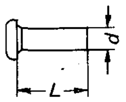
DIMENSIONS AND PART NO. OF PRECISION SCREWS

⊕ K
(Flat-countersunk-head screw)



Type	Size (mm) (d × L)	Part No. Black	Part No. Silver
Type 1	K1.4 × 1.6	7-627-451-08	7-627-451-07
	K1.4 × 1.8		
	K1.4 × 2	7-627-451-38	7-627-451-37
	K1.4 × 2.2		
	K1.4 × 2.5	7-627-451-18	7-627-451-17
	K1.4 × 2.8		
	K1.4 × 3	7-627-451-28	7-627-451-27
	K1.4 × 3.5		7-627-451-47
	K1.4 × 4		
	K1.4 × 4.5		
	K1.4 × 5	7-627-451-78	7-627-451-77
	K1.7 × 1.8		
	K1.7 × 2		
	K1.7 × 2.2		
	K1.7 × 2.5		
	K1.7 × 2.8		
	K1.7 × 3		
	K1.7 × 3.5		
	K1.7 × 4	7-627-450-78	
	K1.7 × 4.5		
	K1.7 × 5		
	K1.7 × 5.5		
	K1.7 × 6		
	K2 × 2	7-627-452-08	7-627-452-07
	K2 × 2.2		—
	K2 × 2.5		—
	K2 × 2.8		—
	K2 × 3	7-627-452-18	7-627-452-17
	K2 × 3.5		—
	K2 × 4	7-627-452-28	
	K2 × 4.5		
	K2 × 5	7-627-452-38	
	K2 × 5.5		
	K2 × 6		
	K2 × 7		
	K2 × 8		

⊕ P
(Pan-head screw)



Type	Size (mm) (d × L)	Part No. Black	Part No. Silver
Type 1	P1.4 × 1.4		7-627-551-47
	P1.4 × 1.6	7-627-551-08	7-627-551-07
	P1.4 × 1.8		
	P1.4 × 2	7-627-551-18	7-627-551-17
	P1.4 × 2.2		
	P1.4 × 2.5	7-627-551-28	7-627-551-27
	P1.4 × 2.8	7-627-551-88	
	P1.4 × 3	7-627-551-58	7-627-551-57
	P1.4 × 3.5	7-627-551-68	7-627-551-67
	P1.4 × 4	7-627-551-78	7-627-551-77
	P1.4 × 4.5		
	P1.4 × 5	7-627-551-38	7-627-551-37
	P1.7 × 1.6	7-627-552-18	
	P1.7 × 1.8		
	P1.7 × 2	7-627-552-28	7-627-552-27
	P1.7 × 2.2		
	P1.7 × 2.5	7-627-552-08	7-627-552-07
	P1.7 × 2.8		
	P1.7 × 3	7-627-552-38	7-627-552-37
	P1.7 × 3.5	7-627-552-78	
	P1.7 × 4	7-627-552-48	7-627-552-47
	P1.7 × 4.5		7-627-552-67
	P1.7 × 5	7-627-552-58	7-627-552-57
	P1.7 × 5.5		
	P1.7 × 6		
	P2 × 1.8		
	P2 × 2	7-627-553-18	7-627-553-17
	P2 × 2.2		7-627-554-07
	P2 × 2.5	7-627-553-28	7-627-553-27
	P2 × 2.8		
	P2 × 3	7-627-553-38	7-627-553-37
	P2 × 3.5		7-627-554-17
	P2 × 4	7-627-553-48	7-627-553-47
	P2 × 4.5	7-627-553-58	7-627-553-57
	P2 × 5		7-627-553-67
	P2 × 5.5		
	P2 × 6		
	P2 × 7	7-627-553-88	7-627-553-87
	P2 × 8	7-627-553-98	7-627-553-97
	P2 × 10	7-627-553-78	7-627-553-77
Type 3	P1.4 × 1.4		7-627-850-37
	P1.4 × 1.6		7-627-850-47
	P1.4 × 1.8		7-627-850-77
	P1.4 × 2	7-627-850-08	7-627-850-07
	P1.4 × 2.2		
	P1.4 × 2.5	7-627-850-18	7-627-850-17
	P1.4 × 2.8		
	P1.4 × 3	7-627-850-28	7-627-850-27
	P1.4 × 3.5	7-627-850-58	7-627-850-57
	P1.4 × 4	7-627-850-68	7-627-850-67
	P1.4 × 4.5		7-627-851-17
	P1.4 × 5		7-627-851-27

9-951-036-11
(With MDR-W5)

Sony Corporation
Consumer Products Group
Technical Support Dept.

English
82K05154-1
Printed in Japan
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